

November 6, 1894.

Sir W. H. FLOWER, K.C.B., LL.D., F.R.S., President,
in the Chair.

The Secretary read the following reports on the additions made to the Society's Menagerie during the months of June, July, August, and September, 1894:—

The total number of registered additions to the Society's Menagerie during the month of June was 113, of which 17 were by birth, 56 by presentation, 16 by purchase, 2 by exchange, and 22 were received on deposit. The total number of departures during the same period, by death and removals, was 165.

Amongst the principal additions were the following:—

1. Three remarkably large and fine specimens of the Hamadryad Snake of India and Burmah (*Ophiophagus claps*), received in exchange and on deposit on the 6th and 8th June¹. We have previously had but one example of this species in the Society's Reptile-house (see P. Z. S. 1875, p. 316).

2. A series of Mammals and Birds from British Central Africa, presented by Mr. H. H. Johnston, C.B., F.Z.S., and carefully brought home by Mr. Alexander Whyte, F.Z.S., the Naturalist on his staff, on June 28th.

It embraces examples of the following species:—

English Name.	Scientific Name.	Locality.
1 Black Mangabey.	<i>Cercocebus aterrimus</i> .	N. of Lake Tanganyika.
1 Yellow Baboon.	<i>Cynocephalus babouin</i> .	Shiré Highlands.
1 Duyker Bok.	<i>Cephalophus mergens</i> .	Upper Shiré.
1 Æthiopian Wart-Hog.	<i>Phaechochærus æthiopicus</i> .	Lake Mweru.
1 Banded Ichneumon.	<i>Herpestes fuscatus</i> .	Shiré Highlands.
1 Milky Eagle-Owl.	<i>Bubo lacteus</i> .	Lower Shiré.
1 Black-crested Eagle.	<i>Lophoaëtus occipitalis</i> .	Shiré Highlands.
2 Green-necked Touracous.	<i>Gallirex chlorochlamys</i> .	„
2 Livingstone's Touracous.	<i>Turacus livingstonii</i> .	„
1 Marabou Stork.	<i>Leptoptilus crumeniferus</i> .	Lower Shiré.
1 Bell's Cinixys.	<i>Cinixys belliana</i> .	Shiré Highlands.

As regards the fine Black Mangabey in Mr. Johnston's series, I am unable to say while the animal is living whether it should be referred to *C. albigena* (Gray), *C. aterrimus*, Oud. (Zool. Gart. xxxi. p. 267, 1890), or to a new species, but it certainly belongs to this section of the genus, and is probably referable to *C. aterrimus*.

¹ See Sir Joseph Fayrer's letter in 'Nature,' June 21st, 1894.

Mr. Johnston writes to me as follows respecting this animal :—

“ This is the history of the Black Monkey. He was brought from the country of Burundi, at the north end of Tanganyika, by Rumaliza, the Arab who has been fighting recently with the Belgians. Rumaliza gave it at Ujiji to Mr. Swann, then in the service of the London Missionary Society. Mr. Swann brought him down to the south end of Tanganyika, and gave him to the Mission Station. The missionary in charge of the station, subsequently hearing that I was collecting all sorts of beasts, sent him to me. I got him fetched down from Tanganyika to Zomba, and thence, as you know, to England. He is undoubtedly a native of the country at the north end of Lake Tanganyika: in other words, of the north-eastern border of the great forest-region of West Africa. Even there he would seem to have been rare, since he was given by the natives to Rumaliza as a curiosity.”

3. A young male White-tailed Gnu (*Connochaetes gnu*), born in the Menagerie on June 23, being the produce of the male and one of the females that were purchased of Mr. C. Reiche, March 7, 1893 (see P. Z. S. 1893, p. 325).

This is the first occasion of this Antelope having bred in the Society's Gardens.

The registered additions to the Society's Menagerie during the month of July were 106 in number; of these, 48 were acquired by presentation, 10 by purchase, 4 by exchange, 26 by birth, and 18 were received on deposit. The total number of departures during the same period by death and removals was 97.

Among these special attention may be called to the following :—

1. A fine female Eland of the striped form (*Oreas canna livingstonii*), from the Transvaal, obtained by purchase July 10th, being the first individual of this variety received by the Society.

2. Two Giant Tortoises from the Aldabra Islands (*Testudo elephantina*), presented by Rear-Admiral W. R. Kennedy, F.Z.S., July 12th.

3. A young male Pleasant Antelope (*Tragelaphus gratus*), bred in the Zoological Gardens, Hamburg, received July 27th.

The following extract from a letter received from Admiral Kennedy gives particulars respecting the Tortoises :—

“ By the kindness of Capt. Cragie, R.N., H.M.S. ‘Crescent,’ I am able to send you the two Giant Tortoises I promised you some time ago. They are now in very fine condition and very tame; I have kept them in our grounds at Trincomalee, where they were very happy and had plenty to eat. I also gave them pumpkins, cabbage-leaves, bananas, Cape gooseberries, &c. In the wild state they feed on cactus and jungle-leaves.

“ These two are male and female; the former weighs 178 lbs., the latter 162 lbs.

“ They are of an inoffensive and affectionate disposition and will probably breed, as the female laid an egg some time ago. I am sure you will value and appreciate these rare and curious creatures. I estimate their ages at about 50 years, but this is mere guess-

work; I can only judge approximately by the old Tortoise at Mauritius, which is twice as big as these and is over 100 years old.

“The dimensions of these Tortoises are as follows:—

“*Male*:—Length, over curve of back, 42 inches.
Height 19 inches.

Plastron, $26\frac{1}{2}$ inches long, 22 inches wide.

“*Female*:—Length, over curve of back, $40\frac{1}{2}$ inches.
Height 17 inches.

Plastron, 26 inches long, 19 inches wide.”

The registered additions to the Society's Menagerie during the month of August were 61; of these, 37 were acquired by presentation, 4 by purchase, 5 by birth, and 15 were received on deposit. The number of departures during the same period, by death and removals, was 87.

The registered additions to the Society's Menagerie during the month of September were 131; of these, 74 were acquired by presentation, 6 by purchase, 7 by exchange, 7 were bred in the Gardens, and 37 were received on deposit. The number of departures during the same period, by death and removals, was 86.

The President stated that he had just received a letter addressed to him by the late Dr. Emin Pasha, C.M.Z.S., without date, but apparently written very shortly before his assassination by the Arabs on the Upper Congo in the autumn of 1892. The letter had been brought from the Congo by M. Dhanis, of the Congo Free State Service, and transmitted to the President by M. Baerts, “Chef de Cabinet” of the Congo Free State at Brussels. It was as follows:—

“The notes hereby joined will prove you that I never forgot how kindly you acted in working out the collections previously sent by me to England. Twice I have tried to forward you specimens I collected, and twice I have been disappointed by the misdirection of my boxes by those entrusted with them.

“The collections now made, and of which the joined notes give some idea, are small, but they hail from the remotest corners of the Continent never before visited by a naturalist, and scarcely to be visited again for years to come. Such is their only merit; if there are novelties amongst them I dare not to decide. Certainly they are a contribution to the knowledge of species as well as of their geographical range, and if they are welcome to you my amplest wishes are fulfilled.

“As for some weeks I shall have to stay here, and the Arabs very kindly promise to make their people collect for me, I hope to be able to obtain many interesting objects, amongst which, in first line, I shall try for a White Chimpanzee.

“The specimens collected for you shall be forwarded with first opportunity by way of Stanley Falls¹, where letters for me should be addressed, and where you may kindly send whatever you can

¹ These specimens have unfortunately not been recovered.

spare of zoological papers, pamphlets, &c. From two years now I am hungry for some zoological pasture.

"If time and circumstances permit, I should greatly like to make an excursion into the Manyema country, where never collections were made. I shall try to refit myself with arseniate of soda, naphthaline, shot, &c., at Stanley Falls. I shall address the specimens to the Zoological Society, but you may inform Mr. Sclater that such specimens as you choose for your own collection should be given to you.

"Believe me to be, Sir,
Yours very sincerely,
DR. EMIN."

The Journal (written in English) which accompanied the letter was as follows. It appeared to be a continuation of the journal originally written in English, but translated and published by Dr. A. Reichenow in the 'Journal für Ornithologie' for 1894 (pp. 162-171):—

"Left Manyema settlement on Ituri (29° 50' L.E., 1° 22' L.N.) on May 29, 1892, and reached chief Amende's place, Ipurungu, the same evening. Distance 27-28 km. N.N.W. Primæval forest. Observed: *Psittacus erithacus* (frequent); a big Woodpecker; *Smithornis*; many kinds of *Criniger*; an orange-brown *Turdus*, with white throat; a very small *Muscicapa* abundant, underneath lighter grey, basal half of bill light yellow, rest black; *Ceuthmochares australis*; *Cuculus solitarius*; *Musophaga rossæ*; *Corythaiæ* spec. (previously collected); *Oriolus brachyrhynchus* (very frequent); *Nigrita canicapilla* (near villages in the open); *Lophoceros semifasciatus*.

"Indekaru village, June 10, 1892.

"The extreme poorness of animal life is a striking fact in the forest we have just traversed. Suppose even the birds being frightened by the noise of a passing caravan—a fact scarcely to be admitted, as they frequent mostly the high trees—there is always a lack of life one can scarcely explain. The ubiquitous Grey Parrot, *Cuculus solitarius*, *Oriolus brachyrhynchus*, and some sp. of *Criniger* are to be heard; sometimes the harsh scream of *Buceros* sounds through the forest; flocks of tiny, tit-like birds twitter, and *Irrisor sharpei* chatters. No Pigeons. At night-time occasionally an Owl is heard. Nevertheless there is life in the forest, but it concentrates in the river parts, on old clearings, deserted villages, and escapes the notice of the traveller. Only these last two days I have heard the call of *Corythæola*, *Centropus*, *Peristera*, and a *Corythaiæ*. Here in the village I might have procured some specimens but for the rank vegetation, in the midst of which any bird killed is hopelessly lost. Shot: *Hapaloderma narina*, ♀ jr., broken.

"No. 1807. *Lophoceros camurus*, Cass., ♀; cf. no. 1409.

"In leaving Indekaru, flocks of a screaming *Coraciæ* were seen, and a big species of Hornbill, probably *Ceratogymna atrata*, was

rather common. A belt of very different forest without any village or inhabitants was then traversed, and on June 18, 1892, we reached Ipoto, Kilongo-longa's place, long. $28^{\circ} 47' 50''$ E. and lat. $1^{\circ} 07' N.$, where a probably long stay is expected.

"No. 1808. *Corythaire* (an *schuetti*, Cab.?), June 20/92; cf. no. 1695 &c.

"No. 1809. *Spermestes poensis*, Fras., ♂. The easternmost point where I obtained this pretty species is Bukoba on Victoria Nyanza; it was there frequent and many specimens were collected. I may also record it from the forests of the Semliki valley, but on Albert lake it seems not to occur. I cannot agree with the statement 'sexes alike;' and if not every female bird I obtained were a young and every male bird an adult, there is some difference, as my specimens will show. In company with these birds, which fly in flocks of from 10 to 40, there is here another apparently yellow-billed Finch.

"No. 1810. *Ploceus nigerrimus*, Vieill., ♂ ad. A very common bird through the forest country, never entering the steppe. The whole of Monbuttu and the Niam-niam country up to Macraca (where I collected it in Tomaja), South Macraca, Kalika, the west coast of Albert Nyanza from Mrva down to Nssabé, the forest in the Semliki valley, and all along the Ituri; finally Bukoba. On Victoria Nyanza were my collecting stations for this species, which is just as gregarious as its congeners. It has a marked predilection for forest villages, often very small, where, infallibly, the biggest tree in the midst of the huts is full of their nests. They are very noisy birds, and as every bird coming in is greeted by all his neighbours, the chatter never ceases.

"No. 1811. ♀. *Laniarius* (?). Small: all over olive-green with white throat.

"Observed: *Motacilla vidua*; *Anthus*, sp.; *Cisticola*, sp., red-headed; *Corythoala cristata*; *Psittacus erithacus*, very common; *Nigrita canicapilla*; *Cuculus solitarius*; *Pycnonotus*, sp.; *Ploceus abyssinicus*, Gm., similis; *Tympanistria tympanistria*; *Treron calva*, very common; *Artomyias*; *Malimbus malimbicus*; *Lophoceros camurus*, and a second, small, black and white species; *Spermestes poensis*; *Columba*, dark grey with white belly, eyelids red; *Astur*, sp.; *Agapornis*, sp., not *pullaria*; a small Parrot, not *P. meyeri*; *Telophonus*; *Centropus*, sp.; *Chrysococcyx cupreus*; *Lamprocolius*, small; *Oriolus brachyrhynchus*; *Ceuthmochares australis*; different *Cinnyris*.

"No. 1812, 13. *Malimbus malimbicus*, Daud., ♂ ♀.

"No. 1814. ♂.

"No. 1815. *Lophoceros camurus*, Cass. Frequent.

"No. 1816, 17. *Lophoceros* ♀ ad., ♂ jr.; cf. no. 1660. Probably new species, as the young resemble the adult.

"No. 1818. *Spermestes poensis*, Fras., ♀ ad. Eggs well-developed. Having dissected this specimen very carefully and found a pea-sized and several smaller eggs, my statement above (cf. no. 1809) becomes invalid. *Sexes exactly alike*.

"No. 1819. *Diaphorophya castanea*, Fras., ♀. Common.

"No. 1820. *Halcyon senegalensis*, L. Common.

"No. 1821. *Agapornis*, ♂. This species, never before met with, is very near to, if not identical with, the Liberian *A. swinderniana*, with which it convenes in general colour, black stripe on the neck, and size. I can, however, not remember if the Liberian bird has likewise the orange-brown broad belt below the black of the neck. Iris pale yellow; feet olive-greenish; bill dark plumbeous, the under mandible paler. In flocks from 3 to 4 these birds may be seen and heard at morning and evening time, when leaving the trees they roost in and returning to them; their shrill twitter is at those times most loudly heard. During the morning they frequent with predilection the new ripening sesame and the rice-fields, and are often on the soil, where they move quickly enough. They are great friends of water, and the Manyema tell most earnestly their feeding on liquid mud. At noon they take repose on the best trees, congregating there to 10-15; at 2 or 3 o'clock they are off again in the fields, take then a second time to the water, and turn in to sleep towards sunset. Their flight is rapid and not so awkward as that of the *Pœocephalus*, of which a small species here exists.

"No. 1822. *Asturina monogrammica*, Temm. Monbuttu, Niam-niam, Macraea, &c. The commonest Hawk in the forest, where Hawks are rare.

"No. 1823. *Laniarius*, ♀. Entirely black.

"No. 1824, 25. *Spermestes poensis*, Fras., ♂ ad., ♂ jr.

"No. 1826. *Spermestes cucullatus*, Swains. Goes up with the forest to 4° 30' L. N. Found in Macraea nesting in straw thatch.

"No. 1827. *Anthreptes*, ♀.

"No. 1828. *Elanus (cœruleus)*, Desf.). Differs from the typical bird by having only the median tectrices white, whereas the remainder show a grey outer web and a white inner web. This species seems particularly given to skin-diseases: 3 out of 5 specimens had fleshy excrescences on the base of the bill or on the feet. Likes open country; never on high trees; fond of insects and mice, hovering in the air and falling suddenly on its prey like a Kestrel. Macraea, Lado (winter), Nile valley to Albert lake.

"No. 1829. *Ploceus*, ♂. *P. nigricollis*, Vieill.

"No. 1830, 31. *Laniarius affinis*, Gray. Monbuttu, Niam-niam; not existing in the Nile valley.

"No. 1832, 33. *Pytelia*, *P. schlegeli*, Sharpe, *affinis* sed *diversa*: ♂ capite coccineo lavato. The first specimen of this species, a badly damaged ♀, was procured at Bukoba, Victoria Nyanza. The present pair, ♂ in moult, was found amongst rushes on the ground. The female has an ochraceous orange face; the male shows on head and throat bright crimson spots, and will, no doubt, when fully moulted, have a red head and prove different from the typical *P. schlegeli*, to which otherwise it entirely resembles. ♂ and ♀ are, the red except, alike; the spotting is the same.

"No. 1834. *Barbatula* (an *scolopucea*, Temm.?).

"No. 1835. *Lamprocolius splendidus*, Vieill.

"No. 1836. *Artomyias*.

"No. 1837, 38. *Psalidoprocne nitens*, Cass. Flocks hovering over the settlement towards evening.

"No. 1839. *Pytelia* (*P. schlegeli*, Sharpe, affinis) ♂ in moult, whole head in moult.

"At night big Owls come to my courtyard.

"No. 1840. *Erythropygia ruficauda*, Sharpe. A very common bird on Albert lake and southwards to Usukuma. Has a pleasant, loud note.

"No. 1841. *Agapornis swinderniana*, Kuhl, ♀. Differs from the male by slightly smaller dimensions; the blue on hind back and uropygium is not very dark; the throat and breast more yellowish; the bill lighter coloured. Congregates in the morning to flocks feeding together on fruit.

"No. 1842. *Picus* ♀.

"No. 1843. *Cuculus solitarius*, Steph., jr. I am not sure if truly this species.

"No. 1844. *Psalidoprocne nitens*, Cass.

"No. 1845. *Syrnium nuchale*, Sharpe, ♂. This is the third specimen of this fine Owl coming into my hands. The first, of a more reddish colour, was obtained at Trumaja, Macraca; the second at Scongga, A-Lendù (1440 m.), on October 9th, 1891, and now the third. The two latter are somewhat darker coloured.

"No. 1846, 47. *Lamprocolius purpureiceps*, Verr., ♂ ♂. Cf. no. 1143. The differences between this species and *L. cupreicauda* are not present to my memory; I leave, therefore, the determination doubtful.

"No. 1848. *Pogonorhynchus*; cf. no. 1677.

"No. 1849. *Pytelia schlegeli*, Sharpe (?), ♂ ad. Without tail. Head bright crimson!

"No. 1850. *Coccyzus cafer*, Licht. Although somewhat small, I believe this bird with the striped throat to range with the said species.

"No. 1851. *Alseonax* (an *minima*, Heugl.?). Very dark. Basal half of lower mandible yellow. In pairs near water.

"No. 1852. ♂. Probably an *Onychognathus* or *Pilorhinus*, but no rusty red on the primaries.

"No. 1853. ♀. Probably an *Onychognathus* or *Pilorhinus*, the inner web only of the primaries rusty red with black tips. Flocks of this Starling, from 10-30, on trees, very noisy.

"No. 1854, 55. *Picus*, ♂ ♂. Small, spotted underneath.

"No. 1856, 57. *Pytelia schlegeli*, Sharpe?, ♂ ♀. These birds were in moult.

"No. 1858, 59. *Bubo*, sp. inc., ♂ ♀. Very dark, long-tailed form, long ear-tufts. I have no descriptions of *B. leucostictus*. When the male with broken leg and wing came down from the tree, the female followed it spontaneously and tried to bite and claw.

"No. 1860. ♂; cf. no. 1852. No rusty red on primaries.

- "No. 1861. ♀.
- "No. 1862. *Spermestes cucullatus*, Swains.
- "No. 1863. *Nigruta canicapilla*, Strickl.
- "No. 1864; cf. no. 1339 etc. This is a very fine species, of which I got a matched pair, exactly alike in size and colour, on June 30, 1891, at Kitimba, Uvamba, 0° 43' L. N. Unfortunately only one specimen was fit to be preserved, and this is the second I obtained now. Head and neck shining bluish black, mantle earth-brown; tail cuneate, black; whole underparts creamy white. 120, 9; 49, 13; 13. Sexes fully alike.
- "No. 1865. *Agapornis* (an *swinderniana*, Kuhl?), ♂.
- "No. 1866. *Anthreptes*, ♀: 93; 12; 48; 17; 14; tail underneath olive not black; perhaps *C. chloropygius*?
- "No. 1867; cf. no. 1823. Entirely black.
- "No. 1868. ♂, not before collected.
- "No. 1869. *Turdus icterorhynchus*, Pr. Würt. Seems slightly different from specimens collected at Lado and elsewhere.
- "No. 1870; cf. no. 1860. A fine specimen of this Starling, without any rusty red on primaries; tail long.
- "No. 1871. *Pytelia schlegeli*, Sharpe?, ♂ moult.
- "No. 1872. *Alseonax* (an *minima*, Heugl.?), ♀; cf. no. 1851. Dark coloured. This will prove a different species.
- "No. 1873. *Ploceus nigerrimus*, Vieill., ♀. I have never yet seen a ♀ of this species coloured like the ♂.
- "No. 1874. *Psalidoprocne nitens*, Cass., ♂. An apparently young bird.
- "No. 1875. *Asturimula monogrammica*, Temm., ♀ ad.
- "No. 1876. *Pogonorhynchus*; cf. no. 1848. More reddish brown.
- "No. 1877. *Erythropygia ruficauda*, Sharpe.
- "No. 1878. *Agapornis* (an *swinderniana*, Kuhl?), ♂.
- "No. 1879. *Trachyphonus purpuratus*, Verr., ♂. Exactly like specimens from Njangabo, the only locality where I have collected this species.
- "No. 1880. *Cuculus clamosus*, Lath., ♂ jr. Without gloss; underneath mottled, only under tail-coverts barred.
- "No. 1881. *Artomyias*, ♂.
- "No. 1882-86. *Agapornis* (an *swinderniana*, Kuhl?). A flock of more than 30 birds surprised at the drinking-place.
- "No. 1887. *Trachyphonus purpuratus*, Verr., ♀. Smaller and duller in colour than ♂.
- "No. 1888. *Pogonorhynchus*; cf. no. 1876. Forehead with light coloured stripes, no feather-shafts.
- "No. 1889; cf. no. 1870 etc. Primaries without rusty red.
- "No. 1890. *Laniarius*, ♂. An *L. verreauxi*, Cab.?
- "No. 1891. ♂. New to me: 132, 9, 84, 43, 17.5. Entirely black, head slightly glossed and scaly; wing-coverts and primaries with bluish-grey edgings; irides scarlet. Bill tit-like, strongly compressed from the sides. A single specimen obtained.
- "No. 1892. *Diaphorophya blissetti*, Sharpe. A fine male specimen.

"No. 1893. *Ploceus nigricollis*, Vieill., ♀.

"No. 1894, 95. ♀ ad., ♂ jr. A very striking, probably new species, found on the ground under low brushwood, where it behaved itself like the *Erythropygia*.

"No. 1896. *Alseonax*; cf. no. 1872 etc., ♀.

"No. 1897; cf. no. 1889 etc., ♀. Exactly alike to no. 1853; inner web of primaries rusty red with black tips. I have very carefully dissected this specimen and found it a ♀. It seems, therefore, that the ♂, besides being black, show no rusty red, whereas the ♀ are grey and show rusty red.

"No. 1898. *Accipiter* ♂. Never before collected; seems not fully adult, as the colour of iris and the rusty tips of some secondaries show. Measurements: 332 mm. (9''·28); 16 (0''·04); 138 (5''·52); 99 (3''·8); 35 (1''·4). I do not know if this is a younger bird of *A. hartlaubi*, Verr., of which I have no description.

"No. 1899. *Eremomela badiceps*, Fras., ♀. This is only the second specimen of this pretty species I ever collected. The first was obtained on June 29, 1891, at Kitimba, Uvamba (0° 43' L.N.), in the forest bordering the western hills of the Semliki valley. It seems, therefore, with many western birds, to find its eastern limit with 30° L. E.

"No. 1900; cf. nos. 1894, 95. A happy encounter, being the ♂ to the above noted ♀ ad. and ♂ jr. A probably new species. It is to be distinguished from the ♀ only by its colours being somewhat darker and the bill being entirely black.

"No. 1901. *Agapornis* (an *swinderniana*?), ♂.

"No. 1902. *Terpsiphone* (an *cristata*, Gm.), ♂. Seems somewhat different from the dark-bellied species, and has certainly no white vent nor thighs.

"On August 1 we left Ipoto for Urumbi; another Manyema settlement in the forest. On our way to the Ituri, which has to be crossed, we observed numerous *Criniger*, *Corythæola*, *Cuculus*, *Halcyon senegalensis*, several *Malimbus*. The banks of the Ituri being thickly clothed with high forest, there were, besides a few *Glareola* on the rocks in mid-stream, no water-birds visible. Abundant are here everywhere different species of Hornbills, from the small *Lophoceros camurus* to the big *Ceratogymna atrata*. I may here observe that during our stay at Ipoto no Raven nor Crow was seen, and of *Columbidae* only *Treron calva* and *Tympanistria tympanistria* were seen. Once I have seen a big *Columba* (*Turturanas*?), entirely stone-grey, somewhat scaly, belly and vent pure white, broad circles around eyes bright red: quid?

"On August 9th, by the carelessness of our Manyema headman, the whole batch of collections was thrown in the river Lenda, which had to be crossed by boat. Pity! On the banks of Lenda river—primæval forest—numbers of a small entirely black Swallow with white markings on tail or rump. All specimens shot were swept away by the current.

"No. 1903. *Terpsiphone nigriceps*, Hartl., ♂. Never before collected.

"No. 1904. A broken specimen of *Muscicapa lugens*, Hartl.

"No. 1905. *Bubo* ♂; cf. nos. 1858, 59. A fine male of this pretty Owl, shot on the march between Lenda river and the Urumbi station.

"On August 20th we reached, after 19 days' forest march, the Urumbi station, the westernmost point of this journey, the road lying now to south until we reach Kirundi (Kabongi's place), on the Upper Congo, where I think Herr Bohndorff collected before me.

"No. 1906. *Barbatula leucolæma*, Verr., ♂. Abundant through the forest region: northwards to Monbuttu and Macraca (4° 20' L. N.), and eastwards to the western shore of Victoria Nyanza (Bukoba).

"No. 1907. *Camaroptera* ♂ *brevicaudata*, Cretzschm. }

"No. 1908. *Camaroptera* ♀ (probably younger). }

"Shot together. The lighter form, not *Syncopta tineta*, Cab.

"No. 1909.

"No. 1910. *Eurystomus gularis*, Vieill.

"No. 1911; cf. no. 1904. Broad yellowish superciliary stripes.

"No. 1912. ♂ } *Cinnyris chloropygius*, Jard. Very common.

"No. 1913. ♀ }

"No. 1914. *Passer diffusus*, A. Smith, ♂ in moult. Very common. I cannot see very valid difference between *P. swainsoni* and *P. diffusus*.

"The last evening at Majoja brought a novelty in the shape of:—

"No. 1915. *Pœocephalus gulielmi*, Jard., ♂. A pair of this pretty species was seen and, although both brought to bay, only the male secured, the female (apparently without red forehead) hiding itself in the high grasses. Seen and heard at Ipoto also but never obtained. Always in pairs, nesting in tree-holes, selecting always a branchless spot. Not rare, but shy. Its voice not like *Psitt. erithacus*, but a stronger action of that of *Pœoc. meyeri*.

"On August 27 we crossed the Lindi river and stopped at Valiasnge on the western bank. Here a very rich avifauna but no time to collect, the preparation for a new forest march being made. Obtained:—

"No. 1916. *Totanus hypoleucus*, L. A small ♀.

"No. 1917. *Pycnonotus layardi*, Gurn., ♂.

"Two entirely spoilt specimens of a *Haplopetia* brought in, but found useless.

"No. 1918. *Turturœnas*, sp., ♂. The whole day fruitlessly spent in pursuit of this species! I had given up all hope of obtaining a specimen when, after having started, a man overtook me on the road and brought me the present one living but badly handled, some primaries and the secondaries having been plucked out: I kept it, however, just for identification. At Kilongolonga's place this species was not infrequent, but very shy and never came within range. Here, in Valiasnge, it frequents in the early morning and towards evening the rice- and Indian-corn

fields, and hides during the day in the adjacent forest. They catch numbers of them on sticks smeared with a viscous matter.

"On August 28th we left the bank of the river Lindi for another eight days' forest march. This part of the country seems rich in birds; the weather is, however, very inclement and we can scarcely dry our clothes. Everywhere lots of Grey Parrots, a favourite nesting-place of which seems to be the banks of a neighbouring river: Hornbills are abundant. I should have collected, but as my two boxes are filled with water, nearly every day, specimens would perish quickly, and I have no shot to squander—being from time to time forced to make shot for myself from bullets.

"September 7th, we reached after a very trying march Ubúre, another Urumbi station; one day has to be spent here.

"No. 1919. *Camaroptera brevicaudata*, Cretzschm., ♂.

"No. 1919 a. *Cisticola*, ♂.

"No. 1920. *Cisticola*, ♂.

"Very frequent *Barbatula leucolama*, Verr.

"From Ubúre another march through mud and water to Ulike Urumbi, a village left by its inhabitants, in the midst of extensive plantain-groves, surrounded by dense forest. Here provisions have to be made for 10–12 days' march to Kiuene, from where the Congo is easily reached in ten short marches. Everyone is collecting plantains, which dried and pounded form our only food; no fat, no animal food being to obtain. At Madjambanis we were seed-eaters (Indian corn, Caffre corn); at Ismaili's we became plantain-eaters; at Kilongo-longa's rice-eaters (*Oryzornis*!); and now we are anew plantain-eaters!

"No. 1921. *Spermestes poensis*, Fras., ♂.

"No. 1922. *Andropadus*, ♂.

"No. 1923. *Cossypha* (an *bartleloti*, Shell.), ♂. This bird differs from the plate in having back and wings dark slate-colour, the centre pair of the tail-feathers entirely black, and the remainder edged with black on their outer webs. Underparts pale, belly nearly white. Measurements exactly like those given by the describer, only tail shorter.

"No. 1924. *Picus*; cf. nos. 1684, 85.

"No. 1925. *Stiphornis*, ♀. Next to *H. gabonensis*, Sharpe.

"No. 1926. *Zosterops virens*, Sund., ♂.

"No. 1927. *Smithornis rufolateralis*, Gray, ♂.

"No. 1928. *Corythura cinnamomea*, Less. Formerly obtained in Monbuttu, 1 spec. at Bukoba, Victoria Nyanza, and 1 spec. very mangled, brought by natives on the upper Ituri; 2 spec. at Mrva, Albert Nyanza. Contrary to its habit of hiding always in the grass and reeds near brooks, the present species was found under a fig-tree—not far from the brook—busily picking at figs covered with small stingless bees which abound here. This species seems not exactly rare, but by reason of its hiding always in the grass and reeds and taking to flight only when forced, it is rarely seen.

"No. 1929. *Turturonas*? ♀ ad.; cf. no. 1918. At last a fair

specimen shot while drinking; the male escaped. Here seen in pairs only and not frequently. The present specimen is somewhat darker in colour than the male previously obtained; its head is, however, with a very slight metallised gloss, whereas the broad iridescent coppery belt on the lower neck is mostly the same as in the male. White on tips of rectrices only very limited. Soft parts resembling to those of the male but duller. The ovary contained a small cherry-sized and two smaller eggs.

"No. 1930, 31. *Picus*, ♂ ♀? Collected at Ismaili's and here, Maika forest, frequent.

"Our last halting-place, before reaching the Congo, was reached on Oct. 12, 1892. It is Muyoméma, commonly called Kinene, the name of its headman, a drunken Uniamuezi slave—Said bin Abeids.

"No. 1932. *Cinnyris chloropygius*, Jard., ♂. Very common.

"No. 1933. *Ploceus nigricollis*, Vieill., ♂. Common.

"No. 1934. *Pycnonotus layardi*, Gurney, ♂. Very common.

"No. 1935, 36. *Laniarius leucorhynchus*, Hartl., ♂ ♀. Black bills; female slightly greyer in colour than male.

"No. 1937. *Cinnyris*, ♂ jr. Perhaps *chloropygia*.

"No. 1938, 39; cf. no. 1894-95. An adult female and a very young male of this interesting species. The young, still younger than no. 1895, has the underparts pure white without any trace of barring.

"No. 1940. *Halcyon senegalensis*, Linn., ♀.

"No. 1941-42. *Corythaix*, ♂ ♀; cf. no. 1808 et 19. This is apparently the most frequent of plantain-eaters through the Eastern forest. Always in pairs, it feeds with avidity on different fruit and berries, of which the stomach is always full. Spec. no. 1941 had in the stomach besides an olive-like fruit a small shell, probably swallowed while adhering on the fruit.

"No. 1943. *Corythaix*; cf. no. 1941-42, ♀ ad.

"No. 1944, 45. *Lophoceros camurus*, Cass., ♂ ♀. Common.

"No. 1946. *Estrellda*, ♂. If this is *E. nonnula*, Hartl., collected by the late Mr. Jameson at Yambuya and by Hr. Bohn-dorff at Stanley Falls, it is certainly different from my birds from Macraca and Monbuttu, and from its dark colour, great extension of red, colour of bill, and black vent I should surely range it with *E. atricapilla*, Verr. It differs, however, from the beautiful figure given by Capt. Shelley in having chin, throat, and sides of head more whitish; and the existence of two different species in localities so near to each other as Stanley Falls and here is scarcely to be believed. I call it, therefore, *E. nonnula* with some doubt.

"No. 1947. *Bubo*, ♂; cf. no. 1905. Not infrequent. Stomach: two field-mice.

"No. 1948, 49. *Spermestes poensis*, Fras., ♂ ♀. Very frequent everywhere on clearings.

"No. 1950. *Estrellda*, ♂; cf. no. 1946. Of the same dark colour as the above specimen; red very bright and extended; under of belly and vent black.

"No. 1951. *Prinia mystacea*, Rüpp., ♀.

"No. 1952. *Cinnyris*, ♂. A small dark bird, perhaps referable to *C. chloropygia*, Jard.

"No. 1953. *Spermestes poensis*, Fras., ♂.

"Observed: *Malimbus cristatus*; *Halecyon senegalensis*; *Diaphorophya castanea*; *Psalidoprocne nitens*.

"No. 1954. *Corythae*, ♂; cf. no. 1943. The common species; always in pairs; call, like a turtle-dove's. Very lively.

"No. 1955. *Andropadus latirostris*, Strickl., ♂ jr. Although the lower mandible is damaged by shot, an interesting specimen in so far that the malar stripes are still very faintly developed.

"No. 1956. *Terpsiphone nigriceps*, Hartl., ♂. Only the second specimen obtained. Not rare.

"Guinea-fowls rather frequent. *Corythola* frequent. I am unable to decide if this Trogon is *Hapaloderma narina* or *H. constantia*.

"No. 1957. *Passer diffusus*, A. Smith, ♀. The common species.

"No. 1958. *Hapaloderma narina*, Vieill., ♂. Not unfrequent.

"No. 1959. *Centropus senegalensis*, ♂ ♀. Quills and secondaries without any dark tips, uniform brown.

"No. 1960. *Andropadus*, ♂. The commonest forest bird, the voice of which is everywhere and always heard."

The Secretary exhibited comparative drawings of the heads of two North-American Swans (*Cygnus americanus* and *C. buccinator*), of which Mr. F. E. Blaauw, C.M.Z.S., had lately received living examples in Holland, and read the following extract from a letter received from Mr. Blaauw on this subject:—

"I send you a water-colour drawing of the head of the *Cygnus americanus* which I received in a living specimen some weeks ago. For comparison I have had the head of *C. buccinator* drawn on the same paper. You will notice that the yellow part of the bill of *C. americanus* is of a pale yellow, more or less mixed with blackish spots; moreover, the line formed by the feathers of the front in *C. americanus* goes in a nearly straight line from the eye to the frontal base of the bill, whilst in *C. buccinator* this line first goes a little forward, before it bends upward to the front. In both birds the edge of the mandibles, especially of the lower one, near the corner of the mouth, is of a pinkish colour. The line formed by bill and head is also quite different in *C. americanus*. On the whole, *C. americanus* is of a slighter build than *C. buccinator*. The plumage in my *C. americanus* is of a pure white, without addition of yellow or greyish feathers on the head."

The following extracts were read from a letter addressed to the Secretary by Mr. R. Trimen, F.Z.S. (dated South-African Museum, Capetown, June 25, 1894), with reference to Dr. A. G. Butler's remarks on his paper on Butterflies from Manica:—

"With reference to Dr. Butler's remarks (P. Z. S. 1894, p. 14,

footnote) on my paper descriptive of the collection of Manica Butterflies formed by Mr. F. C. Selous, I wish to note my regret that—unaware, of course, of what species had been described in Mr. Butler's then unpublished paper on Mr. Johnston's Nyasaland collection—I should have redescribed as new *Charaxes whytei*, Butl. (as *C. selousi*), and *Castalius hypoleucus*, Butl. (as *Lycena exclusa*). As to these two species there can be no doubt attaching to Mr. Butler's identification; but with respect to his opinion that *Cycloptides mineni*, mihi, = *Ceratrachia stellata*, Mabille, and that *Pamphila zimbazo*, mihi, = *P. ranoha*, Westw., I do not feel at all sure that the synonymy is accurate. It is true that I have not seen the type either of Mabille's or of Westwood's species, and, unfortunately, the diagnosis in each case is very brief and leaves much to be desired; but I wish to specify here the apparent discrepancies between the two insects that I have described and the respective diagnoses of Mabille's and Westwood's species.

"1. In the first place, my *Cycloptides mineni* is certainly not a *Ceratrachia*; although, as I have remarked (*l. c.* p. 72), its general aspect and markings remind one of that genus, the short (instead of very long) antennæ at once indicate a very distant relationship. M. Mabille (Ann. Soc. Ent. Belg. xxxv. p. lxx, 1891) describes his *Cer. stellata* as exhibiting 'huit points blancs vitrés' in the fore wings, and notes the position of five of them (including 'deux dans la cellule'); my *Cyc. mineni* has ten small but well-defined spots, including two in the discoidal cell. He adds 'dessous des ailes inférieures avec la côte rousse'; in my insect this part (including the discoidal cell) is *dull pale yellow*, 'inférieures à bord abdominal poudré de jaune'; in *Cyc. mineni* all the hind wing is yellow, 'un point blanc dans la cellule et une rangée circulaire de huit autres points semblables plus petits'; in *Cyc. mineni* the discocellular spot is *fuscous*, and the discal series consists of *seven white spots rather large and very conspicuous*.

"2. Westwood's diagnosis of *Pamphila ranoha* (App. Oates's Matabeleland, p. 353) agrees very fairly with my *P. zimbazo* as far as the upperside of the wings is concerned; but 'alis posticis fulvis nigro-guttatis' is not applicable to the underside in my species, which (as noted by me, *l. c.* p. 75) is *dull pale ochre-yellow*, with a tinge of olivaceous brown or less *reddish* incompletely fuscous-edged spots.

"As stated in my 'S. Afr. Butt.' (iii. p. 311), I refer *P. ranoha*, Westw., to a variety of *P. morantii*, mihi; but, until comparison with Westwood's type can be made, I admit that the identification is only provisional.

"It is to be wished that the excellent figures illustrating my paper had given the undersides of the species concerned, as in that case the differences above pointed out could be more readily observed.

"There is a small but not unimportant mistake in the figure of the underside of *Chrysorychia cruenta* (pl. vi. fig. 13), where the longitudinal white streak, which is actually a marking of the

fore wings between the first median nervule and the submedian nervure, is depicted as a costal marking of the hind wings.

“In the figure of *Lycornesthes lunulata* (pl. vi. fig. 12) the characteristic generic character of slender tufts of hairs at the extremity of both 2nd and 1st median nervules in the hind wings—in this species white and rather conspicuous—is not indicated.”

A communication received from Dr. R. W. Shufeldt, C.M.Z.S., contained the following correction to his paper “On the Affinities of the *Steganopodes*” (P. Z. S. 1894, p. 160):—

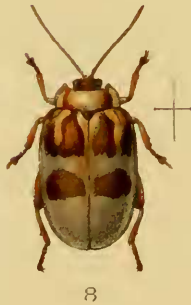
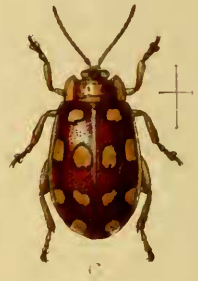
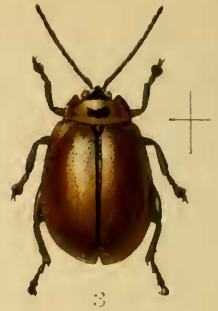
“Owing to the fact that I was unable to correct the proof of my paper on the *Steganopodes*, which appeared in the ‘Proceedings’ of the Society for 1894, an unfortunate error crept into it, which I here desire to rectify. There is no question but that the Cormorants, the Anhingas, and the Gannets, each and all, constitute good families, and my taxonomic scheme should stand as given below, instead of the way it appeared, thus:—

SUPERFAMILIES.	FAMILIES.	GENERA.
Pelecanoidea	{	Pelecanidæ <i>Pelecanus.</i>
		Phalacrocoracidæ . . <i>Phalacrocorax.</i>
		Anhingidæ <i>Anhinga.</i>
		Sulidæ <i>Sula.</i>
Phaëthontoidea	{	Phaëthontidæ <i>Phaëthon.</i>
Fregatoidea	{	Fregatidæ <i>Fregata.</i> ”

Mr. Salvin exhibited a pair of the newly described Butterfly (*Ornithoptera paradisea*, Staudinger, Iris, Dresden, vi. p. 350) from the Finisterre Mountains, German New Guinea, belonging to the Godman and Salvin collection.

Mr. Boulenger exhibited an interesting Gecko from South Africa, with the following remarks:—

“This Gecko has been sent to me by Mr. Richard T. Lewis, with the remark that it was captured during the recent winter (July 1894) on the snow upon the highest portion of the Drakensberg range, N.W. Natal, very active and apparently enjoying life on ice and snow. The fact of a Gecko being found under such circumstances is highly interesting, considering that this group of Lizards is almost entirely confined to the hotter parts of the globe, only a few species extending to the borders of the Mediterranean and to China and Japan in the Northern Hemisphere, and to New Zealand in the Southern Hemisphere. But the Lizard itself deserves special notice as belonging to a genus, *Edura*, which, until very recently, was believed to be confined to Australia. In 1888, however, I described a South-African species from Damaraland under the name of *Edura africana*. The present Lizard, although closely allied, differs in the smaller and



W. Farkas det.

West, Newman imp

more convex granules on the upper surface of the head and in the rostral shield not bordering the nostril; I propose for it the name *Edura nivaria*. A description will be published in a forthcoming Report on additions to the Collection of Lizards in the British Museum"¹.

Mr. C. Davies Sherborn exhibited and made remarks on a copy of the reprint of George Ord's 'North-American Zoology,' recently published in the United States (Haddonfield, New Jersey, 1894).

The following papers were read:—

1. Descriptions of new Species of Coleoptera of the Genera *Edionychis* and *Asphæra*. By MARTIN JACOBY, F.E.S.

[Received August 1, 1894.]

(Plate XXXVIII.)

In 1860 a Catalogue of Halticidæ was published by the Rev. Hamlet Clark, forming one of the British Museum Catalogues. With very few exceptions, no species of *Edionychis* and its allies were described, although they amount to some 450 in number. To make a beginning I have described those species which are at present represented in my own collection, and which I have in all instances compared with the specimens contained in the British Museum and named by Clark, retaining in every case the latter author's name.

The genus *Edionychis* almost rivals in number of species the genus *Diabrotica* amongst the *Galerucidæ*, and is as variable in the coloration as is the case with species of the latter genus. All species of *Edionychis* can be separated from the allied genus *Asphæra* by the shape of the thorax, which has broadly flattened sides, with generally slightly outward pointed anterior angles, the same parts in *Asphæra* being straighter and produced forward, not outward; the metatarsus of the posterior legs is also in all cases very short in *Edionychis* and the inflated terminal claw is globular. In *Asphæra* the corresponding joint is longer, and the claw is but moderately swollen; intermediate degrees I have not observed to any marked extent. With two exceptions, all the species described here are from tropical South America.

EDIONYCHIS ALBIPENNIS (Clk. Catal.).

Pale testaceous, the intermediate joints of the antennæ and the disc of the thorax black; elytra very finely punctured; a spot on the shoulder black.

Var. *a*. Obscure fuscous, the elytral spot absent, the tibiæ and tarsi black.

¹ [Vide *infra*, p. 722.—Ed.]

Var. *b*. Thorax with the anterior and posterior margins partly black, the rest of the surface unspotted.

Length 3-3½ lines.

Head impunctate, the eyes large, the intermediate space narrower than their diameter, the frontal tubercles short and broad, bounded behind by a deep groove; antennæ slender, extending nearly to the middle of the elytra, the basal four and the apical two joints pale fulvous, the others black, the third and fourth joints equal; thorax a little more than twice as broad as long, the anterior and posterior margins nearly straight, the disc black, the sides rather strongly rounded, narrowed anteriorly, the anterior angles not produced outward, the surface impunctate, the sides rather broadly flattened; elytra very finely and closely punctured, pale testaceous, with the extreme base and an elongate spot on each shoulder black; legs streaked with black above.

Hab. Amazons, Ega.

This is a rather variable species and one of those in which the eyes are larger than the intermediate space; in the normal form the disc of the thorax is black, but in many specimens only the anterior and posterior margins are more or less marked with this colour; the femora are either spotted above with black as well as the tibiæ, or are entirely testaceous; the antennæ also vary, having sometimes the first and the last joint testaceous only, or this colour is spread over several joints.

EDIONYCHIS TABIDA (Clk. Catal.).

Pale testaceous, the head, breast, and the apex of the posterior femora black; thorax impunctate; elytra closely and distinctly punctured.

Length 2¾ lines.

Head finely punctured, the vertex piceous, the labrum flavous, frontal elevations subquadrate; antennæ fuscous, the basal three joints flavous, third joint scarcely shorter than the fourth; thorax with strongly rounded lateral margins, the anterior angles acute but not produced into a tooth, the surface impunctate, the scutellum piceous; elytra very closely and rather strongly punctured throughout; abdomen and legs testaceous, the posterior femora with a piceous spot at the apex, posterior claws piceous.

Hab. Brazil.

Of this species a single specimen, named by Clark, is contained in my collection; the general colour is a uniform obscure testaceous, but the dark head, breast, and the femoral spot, as well as the very close and rather strong elytral punctuation, will separate this species from others similarly coloured.

EDIONYCHIS NIGROSCUTATA, n. sp. (Plate XXXVIII. fig. 3.)

Robust, convex, black; head and thorax impunctate, the latter flavous with a central black spot; elytra testaceous, rather strongly punctured, the suture narrowly black.

Length 4 lines.

Of broadly robust shape, the head black, with a narrow flavous margin near the eyes, and a few fine punctures; clypeus and labrum black; antennæ not extending to the middle of the elytra, black, the third joint shorter than the fourth; thorax three times broader than long, the anterior margin deeply concave, the posterior one slightly rounded, sides strongly rounded in front, nearly straight at the base, the anterior angles thickened and produced into a short tooth pointing outward, the surface impunctate, flavous, the middle with a short irregular-shaped black spot; scutellum black; elytra strongly convex, closely and rather strongly punctured, the interstices somewhat wrinkled, testaceous, the suture narrowly black; underside and legs black.

Hab. Brazil, Sta. Catharina.

From the species having uniform pale elytra, the present one may be known by the black suture, the spot on the thorax, and the black head.

GEDIONYCHIS DISCICOLLIS (Clk. Catal.).

Black, the margins round the eyes, the basal joints of the antennæ, and the margins of the thorax testaceous; elytra very finely punctured, testaceous or flavous, the suture, two elongate spots at the base, a transverse spot below the middle and another near the apex black; the base of the anterior femora and tibiæ flavous.

Var. Thorax testaceous, with a black spot on the posterior margin.

Length $2\frac{1}{4}$ lines.

Head impunctate, piceous or black, the margins round the eyes, the clypeus, and the palpi testaceous; frontal tubercles transverse, strongly raised; antennæ black, the lower two or three joints testaceous, third and fourth joints elongate, equal; thorax three times broader than long, short and nearly parallel, the sides rounded in front, straight at the base, the anterior angles not produced outward, the surface impunctate, testaceous, with a transverse black band across the disc, the anterior margin of which is indented at the middle, the sides of this band extend as far as the flattened portion of the thorax; scutellum black; elytra extremely finely punctured (the punctures in some specimens scarcely perceptible), testaceous, the suture, two spots at the base (sometimes confluent), a subquadrate larger spot below the middle, and another smaller one near the apex black, none of these spots extend quite to the sutural or lateral margin; elytral epipleuræ testaceous; underside and legs black, the greater part of the base of the four anterior femora and their tibiæ flavous.

Hab. Brazil, Therezopolis.

Allied to *O. spilota*, Baly, but differing in the colour of the thorax and the nearly impunctate elytra.

GEDIONYCHIS EVANIDA (Chevr. *in litt.*).

Black, the lower portion of the face and the thorax fulvous, the

latter impunctate; elytra very finely punctured, flavous, a triangular spot surrounding the scutellum, a small spot on the shoulder, and a narrow transverse band before the apex black.

Length 3 lines.

Head impunctate, black, the lower part flavous, frontal tubercles obliquely transverse, strongly raised, carina short and convex; antennæ rather slender, black, the lower three joints obscure fulvous, third and fourth joints equal; thorax parallel, the anterior and posterior margins straight at the middle, the sides rounded, thickened as well as the anterior angles, which are not produced outwards, the surface impunctate, shining, fulvous, the base with an obsolete transverse sulcus; scutellum black; elytra very minutely punctured, with a narrow flattened margin, flavous, the base with a narrow transverse black band which widens at the suture into a triangular spot and terminates at the shoulders in a small spot, another narrow band is placed at a little distance from the apex, the sutural margin also is narrowly marked with black, neither of the transverse bands extends quite to the lateral margins; underside and legs black.

Hab. Brazil.

Closely allied to *Æ. faceta*, Har., but in that species the head is entirely black, the thorax is of entirely different shape and has a black spot, and the elytral bands are purplish violaceous.

ÆDIONYCHIS DILECTA (Chevr. *in litt.*).

Fulvous; antennæ (the basal joints excepted) black; head with one, thorax with two black spots, impunctate; elytra closely and strongly punctured, a broad transverse band at the base and the posterior half metallic blue, the lateral margin fulvous.

Length $2\frac{3}{4}$ lines.

Head impunctate, fulvous, the vertex black, the space between the eyes depressed, with some punctures; antennæ with the three lower joints fulvous, the others black, third and fourth joints equal; thorax more than twice as broad as long, the sides straight at the base, strongly rounded before the middle but scarcely narrowed anteriorly, the anterior angles tuberculiform, the surface smooth, shining, fulvous, the disc with two black oblique spots; scutellum black; elytra convex, with a narrow flattened margin, very closely and distinctly punctured, the punctures stronger anteriorly near the suture than posteriorly, the base slightly raised, the blue bands interrupted at the middle by a narrow fulvous band and not extending laterally to the margins, the posterior margin of the basal band sinuate, the anterior margin of the posterior band convex; underside and legs fulvous.

Hab. Constançia, Brazil (*Gray*).

ÆDIONYCHIS QUADRIPUSTULATA (Clk. Catal.). (Plate XXXVIII. fig. 7.)

Rather narrow and elongate, ferruginous; antennæ (the basal joints excepted) black; thorax pale flavous, with a ferruginous spot

anteriorly; elytra closely and distinctly punctured, pale flavous, the lateral and sutural margin, a transverse band at the base, and another below the middle ferruginous.

Length $2\frac{1}{2}$ lines.

Head impunctate, ferruginous, shining, the frontal elevation scarcely raised, the carina acute; antennæ short, black, the lower two joints more or less flavous, the fourth joint very elongate, quite double the length of the third, the following joints short, equal; thorax but slightly narrowed anteriorly, the sides nearly straight, the anterior angles not produced outward, the surface impunctate, yellowish white, the anterior margin with a ferruginous spot at the middle; scutellum fulvous; elytra closely and rather strongly punctured, of the same colour as the thorax, the base with a narrow transverse brown band, which is connected by the lateral and sutural margins with a similar band below the middle, these bands have a slight tinge of purple; if the dark colour is taken for that of the ground, the elytra may be described as brown with a large discoidal ovate spot and the apex whitish; underside and legs ferruginous, tibiæ and tarsi rather darker.

Hab. Sta. Catharina, Rio Janeiro, Brazil; also Bolivia.

ÆDIONYCHIS CRUCIFERA, n. sp. (Dej. *in litt.*).

Black; thorax flavous, impunctate; elytra finely punctured, metallic blue, a rounded spot at the base and a more transverse one below the middle, not extending to either margin, flavous.

Length $3\frac{1}{2}$ lines.

Head entirely black, scarcely punctured; antennæ nearly extending to the middle of the elytra, black, the intermediate joints slightly widened, the third joint only half the length of the fourth; thorax three times broader than long, flavous, the sides broadly flattened, bounded within by a deep longitudinal groove, the lateral margins rounded in front, the anterior angles dentiform, the surface impunctate; scutellum black; elytra widened at the middle, broadly margined, the shoulders prominent, bounded within by a deep depression, very finely punctured, the apex impunctate; underside and legs black, the last abdominal segment of the male with a broad, rounded, and produced medial lobe.

Hab. Brazil.

If the flavous colour of the elytra is taken as the ground-colour, the blue portion extends across the middle in shape of a narrow and somewhat oblique band, and a triangular patch is placed at the apex, all the margins are also narrowly blue; the epipleuræ are flavous within, bluish at the outer margin. The species named by Clark *Æ. murrayi*, in his Catalogue, does not differ from the present one except in the black, not blue, elytral markings.

ÆDIONYCHIS CRUX-NIGRA (Chevr. *in litt.*).

Black; thorax flavous, impunctate; elytra rather closely and strongly punctured, flavous, the base, suture, a lateral stripe

extending to the middle, and connected with a transverse narrow band below the middle, metallic violaceous.

Length $3\frac{1}{2}$ lines.

Head black, impunctate, frontal elevations piceous; antennæ not extending to the middle of the elytra, black, third and fourth joints equal; thorax about twice and a half broader than long, the sides strongly rounded and broadly flattened, the anterior angles produced into a short tooth, the surface impunctate, flavous; scutellum black; elytra slightly widened towards the middle, rather closely and strongly punctured, flavous, the basal margin, the suture, a transverse narrow band below the middle, and an equally narrow stripe near the lateral margin violaceous blue, all these stripes are connected with each other; underside and legs black.

Hab. Brazil.

Not unlike *Æ. crucifera* in design and colour, but the transverse elytral stripe in that species is placed before, not below, the middle, and the entire lateral margin is of a blue colour.

EDIONYCHIS BEATULA, n. sp. (Clk. Catal.).

Ovately rounded, short, piceous below; vertex of head black; thorax flavous, impunctate; elytra nearly impunctate, flavous, a broad transverse band at the base and another equally broad one at the posterior half dark violaceous.

Length $2\frac{1}{2}$ lines.

Head impunctate, the vertex nearly black, lower part of the face flavous, labrum black; antennæ with slender joints, black, the lower three flavous, third and fourth joints equal (last three joints wanting); thorax more than twice as broad as long, the sides but moderately rounded in front, the anterior angles produced into an acute point or tooth, the surface impunctate, flavous; scutellum black; elytra strongly widened at the middle, almost impunctate, the surface somewhat uneven, the anterior portion with a broad transverse violaceous band not extending to the lateral margins, its posterior edge rather rounded and not reaching quite to the middle of the elytra, a narrow flavous band separates it from another broad violaceous patch of similar shape not extending to the apex nor the sides; underside obscure piceous, posterior femora and the abdomen of mottled appearance, partly obscure fulvous.

Hab. Amazons.

The nearly impunctate elytra and the narrow flavous band dividing the two darker ones at the middle will help to distinguish this species from several nearly similarly coloured forms.

EDIONYCHIS QUADRIPLAGIATA (Clk. Catal.).

Black, the head greenish black at the vertex; thorax flavous, nearly impunctate; elytra finely punctured, flavous, with a transverse bluish band at the base extending nearly to the middle, and another band below the latter not extending to the apex nor the

margins, the lower edge of the posterior band emarginate at the apex.

Length $2\frac{1}{2}$ – $3\frac{1}{2}$ lines.

Head greenish black at the vertex, with some punctures near the eyes, the space surrounding the latter and the lower portion of the face flavous; labrum black; antennæ short, reaching only to the base of the elytra, black, the apical joint obscure fulvous, the basal joints stained with testaceous at the apex, the fourth joint very slightly longer than the third; thorax nearly three times as broad as long, the sides straight at the base, rounded in front, the anterior angles produced outward into a tooth, the surface with a few minute punctures, the sides broadly flattened; scutellum black; elytra convex, nearly parallel, the lateral margins narrowly and a transverse straight narrow band at the middle as well as the apex flavous, the rest of the surface occupied by two broad transverse metallic blue bands, the lower edge of the posterior band emarginate near the apical angle, the punctuation very fine, more strongly marked in the flavous portion; underside and legs black.

Hab. Brazil.

Closely allied in coloration to several other species, notably to *Æ. honesta*, Illig., *Æ. eburata*, Germ., *Æ. bifasciata*, Baly, and *Æ. steinheili*, Jac., but differing from *Æ. honesta* in the shape of the posterior blue elytral band, which does not extend to the lateral margins as is the case in the last-named species, and in the black colour of the legs: *Æ. eburata* is described as having a black hind margin to the thorax and black elytral bands; *Æ. bifasciata* has a fulvous underside and legs as well as similarly coloured head; *Æ. steinheili* is much larger and differs likewise in the colour of the head, antennæ, and underside; while *Æ. blanda*, Har., has only the base and the apex of the elytra blue. In the present species the blue elytral bands are divided by a perfectly straight fulvous band at the middle, which is half the length of the dark band at the base; the emargination of the posterior band near the apex will further help to distinguish *Æ. quadriplagiata*, in one specimen the flavous central band does not quite reach the suture.

ÆDIONYCHIS CENTURIO (Clk. Catal.).

Flavous, the base of the head and the antennæ (the basal joints excepted) black; thorax flavous, impunctate; elytra finely punctured, a transverse band at the base, another below the middle, and the extreme apex metallic blue.

Length 2 lines.

Head with a few deep punctures on the vertex, bluish black, the lower part of the face flavous; antennæ black, the lower three joints obscure fulvous, third and fourth joints equal; thorax twice and a half broader than long, the sides moderately rounded, very obsoletely angulate at the middle, the anterior angles dentiform, the surface impunctate, flavous, very obsoletely sulcate near the base; scutellum black; elytra closely and finely punctured, flavous,

a broad transverse band at the base, not extending to the sides and anteriorly as far as the shoulders, an equally broad band below the middle touching the lateral margins and the apex, metallic blue; the epipleuræ, underside, and legs flavous, the femora rather darker, the tarsi piceous.

Hab. Colombia.

A small species, differing from somewhat similar coloured ones by the blue apex of the elytra; the flavous bands dividing the metallic colour are narrow, but the central band is wider than that which separates the posterior band from the apical spot.

ÆDIONYCHIS TRIMACULATA (Clk. Catal.).

Black, the clypeus flavous; the thorax impunctate, flavous; elytra convex, testaceous, closely punctured and finely rugose, a transverse band at the base and a subtriangular spot below the middle bright metallic blue.

Length 4 lines.

Head bluish black, sparingly but distinctly punctured, the clypeus flavous; antennæ black, the third and fourth joints equal, terminal joints shorter; thorax with very strongly rounded sides, flavous, the anterior angles produced but not dentiform, the surface impunctate, the sides flattened; scutellum black; elytra convex, rugose and closely punctured, testaceous, the base with a transverse light blue band, not extending to the lateral margins, and a large subtriangular spot of the same colour and transverse shape near the apex; underside and legs black.

Hab. Colombia.

Principally distinguished by the rugosely punctured elytra.

ÆDIONYCHIS OSCULANS (Clk. Catal.).

Black, the sides of the head testaceous; thorax very minutely punctured, testaceous, the disc with three black spots; elytra very finely and closely punctured, testaceous, a sutural, two discoidal, and a sublateral stripe violaceous.

Length 4 lines.

Head greenish black, the space surrounding the eyes flavous, strongly punctured, labrum partly flavous; antennæ black, the extreme base of the first joint flavous, third joint much shorter than the fourth; thorax nearly three times broader than long, the sides nearly straight at the base, rounded in front, the posterior margin evenly rounded, the anterior angles tuberculiform, the surface very minutely punctured, testaceous, a large spot at each side and a small spot at the middle of the base greenish black; scutellum greenish; elytra extremely finely punctured, with four narrow longitudinal stripes, a sutural one, two at the disc, joined at the apex but not extending to the latter, and a sublateral broader stripe which joins the sutural one at the apex; elytral epipleuræ flavous; underside and legs black.

Hab. Rio Grande, Brazil.

A great many species of *Ædionychis* with longitudinal dark

stripes have been described, principally by von Harold, but I am not able to identify with either of them the present species, which perhaps is most nearly allied to *Æ. inconstans*, Schauf., and *Æ. formosa*, Har.; none of these or others have, however, three longitudinal stripes on each elytron besides the sutural one as is the case in *Æ. osculans*; there are besides these other differences which must be compared in the descriptions; my specimen agrees entirely with the one contained in the British Museum and which served Clark for his type.

GEDIONYCHIS INTERSIGNATA, n. sp. (Chevr. *in litt.*).

Very convex, black; thorax impunctate, the sides flavous; elytra very finely punctured, metallic violaceous, a transverse band at the middle, not extending to the suture, and a spot at the apex flavous.

Length $3\frac{1}{2}$ lines.

Head black, impunctate, shining; the antennæ extending only to the base of the thorax, black, the third joint shorter than the fourth; thorax more than twice as broad as long, the sides strongly rounded, the anterior angles tuberculiform, the surface impunctate, shining, black, the sides as far as the flattened portion flavous; scutellum black: elytra very convex, finely and closely punctured, of a dark purplish violaceous colour, a broad transverse band at the middle, interrupted by the suture, and a subtriangular spot at the apex bright flavous; epipleuræ violaceous within, flavous at their outer margin; underside and legs black, shining.

Hab. Surinam.

Not unlike *Æ. libentina*, Germ., in coloration, but larger, more convex, the elytral band much narrower and not extending to the suture.

GEDIONYCHIS OBLONGA (Clk. Catal.)

Fulvous, the apical joints of the antennæ black; thorax impunctate; elytra fulvous, impunctate, a broad transverse band at the base and another below the middle, not extending to the sides, violaceous blue.

Length 3 lines.

Head entirely impunctate, fulvous, the frontal elevations not strongly raised, carina short and thick; antennæ extending to the middle of the elytra, the lower four or five joints fulvous, the others nearly black, fourth joint very elongate, slightly longer than the fifth, third joint scarcely half the length of the fourth; thorax about twice and a half broader than long, the sides rather evenly rounded, with the usual flattened margins, the surface entirely impunctate, with a narrow transverse impressed line or sulcus near the base, anterior angles rather acutely pointed; scutellum fulvous; elytra pale fulvous, entirely impunctate, the base with a broad transverse violaceous band extending nearly to the middle but not to the sides, the posterior margin of this band obliquely rounded at the latter place, a similar band is placed below the middle, the outer margins of this band are also rounded

and do not quite extend to the sides or the apex; underside and legs fulvous, clothed with fine yellowish pubescence.

Hab. Amazons.

(*EDIONYCHIS PULCHELLA* (Chevr. *in litt.*).

Black, the clypeus and thorax flavous, the latter impunctate; elytra finely and very closely punctured, fulvous, a narrow transverse band at the base, the suture, and a broad band below the middle, nearly extending to the apex, metallic blue.

Length $2\frac{3}{4}$ lines.

Head rather closely punctured at the vertex, bluish black, the frontal tubercles oblique, the carina indistinct; clypeus flavous; antennæ extending to the middle of the elytra, black, the lower three joints flavous below, the third joint distinctly shorter than the fourth; thorax with rounded sides, rather strongly narrowed in front, the anterior angles produced into a small tooth, posterior margins straight, the surface impunctate, flavous; scutellum black; elytra finely but distinctly and very closely punctured, the suture, connected with and widened at the base into a narrow transverse band which does not quite extend to the sides, and a broad and nearly straight band immediately below the middle, extending to the sides but not to the apex, metallic blue; epipleuræ flavous; underside and legs black, abdomen partly testaceous at the middle.

Hab. Venezuela.

If the blue colour of the elytra is taken for that of the ground, they may be described as metallic blue, with a broad transverse fulvous band, not extending to the suture, commencing directly below the base and extending to the middle, and a small fulvous spot at the apex; the anterior edge of the fulvous band is very convex and obliquely rounded towards the suture; the blue colour forms a triangular patch at the suture at the base and narrows to a band near the shoulders; the anterior margin of the posterior blue band is nearly straight, the posterior margin rounded.

(*EDIONYCHIS CYANEO-FASCIATA*, n. sp.

Black, the clypeus flavous, basal joints of the antennæ fulvous; thorax flavous; elytra minutely punctured, flavous, a broad transverse band at the base and a similar band below the middle dark blue.

Length 3 lines.

Head black, shining, with a few punctures near the eyes, the latter widely separated, the frontal tubercles rather flat, subquadrate; the clypeus flavous, labrum and palpi piceous; antennæ fuscous, the basal five or six joints fulvous, third joint distinctly shorter than the fourth; thorax bright flavous, the sides nearly straight, flattened as usual, the anterior angles acutely produced into a tooth, pointing outwards, the posterior margins somewhat rounded, the surface convex, flavous, with a few minute punctures when seen under a strong lens; scutellum black; elytra extremely finely punctured, the posterior portion impunctate, the blue transverse bands

very broad, of equal width and not extending to the lateral nor apical margin, the anterior band with a short but deep indentation in front of the humeral callus, the posterior band emarginate near the suture at the apex; underside and legs black, tibiæ piceous.

Hab. Bolivia.

Narrower in shape than *Æ. steinheili*, Jac., the head and underside differently coloured, the elytral bands of different shape. *Æ. quadriplagiata*, Jac., has more strongly punctured elytra, differently coloured antennæ, a much broader thorax, and no emarginate anterior blue band of the elytra; the finely punctured elytra and shape of the bands distinguish the species also from *Æ. ornamentalis*, Har.

ÆDIONYCHIS NIGRONOTATA, n. sp.

Testaceous; the head, the intermediate joints of the antennæ, and the scutellum black; thorax impunctate; elytra finely punctured, testaceous, a transverse stripe at the middle, two spots at the base, and two others near the apex black.

Length 3 lines.

Head black, sparingly and finely punctured, frontal tubercles subquadrate, palpi testaceous; antennæ with the basal four and the apical three joints testaceous, the others black, third joint very slightly shorter than the fourth; thorax narrowed in front, the posterior margin straight, the anterior one semicircular, the anterior angles acutely pointed but not produced outwards, the sides broadly flattened, the surface impunctate, pale testaceous; scutellum black; elytra very closely and finely punctured, coloured like the thorax, with the following black spots—an elongate spot on the shoulder, a small round one near the scutellum, two small spots placed transversely below the middle, and a narrow transverse band at the latter place not extending to either margin; underside black, the legs and the sides of the abdominal segments testaceous, the posterior femora with a black spot at the apex.

Hab. Brazil.

Of this species I possess a single specimen, without exact locality: the pale ground-colour, that of the antennæ, and the position of the elytral spots will help in the recognition of the species.

ÆDIONYCHIS PALPALIS, n. sp.

Pale fulvous, the head and part of the breast black, palpi incrassate, thorax impunctate; elytra extremely finely punctured, a bifurcate band at the base and a transverse curved band near the apex black.

Length $3\frac{1}{2}$ lines.

Head black, impunctate; the eyes very large, larger than the space dividing them; frontal tubercles and carina strongly raised, the penultimate joint of the palpi strongly incrassate; antennæ long, fulvous, the third joint much shorter than the fourth; thorax scarcely more than twice as broad as long, narrowed anteriorly, the anterior angles produced outwards into a small tooth, the sur-

face impunctate, flavous; scutellum flavous; elytra extremely finely punctured, flavous or obscure fulvous, with an elongate bifurcate black mark, placed on the shoulder and near the suture, open at its lower end, and a transverse narrow and slightly curved band near the apex not extending to either margin; underside and legs pale fulvous.

Hab. Amazons.

The strongly thickened palpi, the narrow space between the eyes, long antennæ, the comparatively narrow thorax, and the shape of the elytral markings well distinguish this species; the spot at the base of the elytra consists of two short longitudinal stripes, joined at the base, one of which is placed on the shoulder, the other near the suture, the first of these is slightly longer than the sub-sutural one, but both are rather thick.

ÆDIONYCHIS CHAPUISI, n. sp.

Testaceous, antennæ and legs fulvous, vertex of the head black; thorax impunctate; elytra scarcely perceptibly punctured, a transverse band at the base and another one below the middle, connected with a triangular spot at the apex, bluish black.

Length $2\frac{3}{4}$ –3 lines.

Head impunctate, blackish at the vertex, the clypeus and labrum flavous; antennæ extending to the middle of the elytra, fulvous, the third joint slightly shorter than the fourth; thorax with strongly rounded sides, the anterior and posterior margins straight, the lateral margins narrowly thickened, the anterior angles not denticiform and but little produced, the surface impunctate; scutellum piceous; elytra nearly impunctate, slightly depressed below the base near the suture, with a narrow flattened margin, the transverse bands broad, only divided by a narrow band of the ground-colour, and not extending to the sides but to the suture, the anterior margin of the posterior band obliquely cut near the suture, the posterior margin connected at the suture with a triangular-shaped spot which occupies the apical angle; legs rather darker than the underside, the femora with an obscure piceous spot at the apex.

Hab. Amazons.

From most of the transversely banded species *Æ. chapuisi* may be known by the extra triangular-shaped spot at the apex of the elytra, which is connected by a narrow sutural stripe with the posterior band. *Æ. labiata*, Schaaf., seems to be a closely allied species, but is said to have a distinctly punctured head and elytra, which is not the case here, both in *Æ. chapuisi* being nearly entirely impunctate; the elytral bands in *Æ. labiata* are further described as being interrupted at the suture, in the present insect they extend entirely across the latter place. Three specimens contained in my collection show no differences in these respects, but in a fourth the pale narrow space which divides the elytral bands does not quite extend to the suture. Whether another specimen from Bolivia which I possess, and which has the elytral bands more distantly apart, represents the same species, it would

not be safe to say; this specimen agrees otherwise with those from the Amazons, but has a black underside and legs, beside the other difference pointed out.

ÆDIONYCHIS SEMIDIVISA, n. sp.

Flavous, the base of the head black, antennæ and legs dark fulvous, thorax impunctate; elytra closely and finely punctured, a subquadrate patch at the base and a more elongate one, more or less indented at the posterior portion, dark violaceous.

Length $2\frac{1}{2}$ –3 lines.

Head with a few punctures near the eyes, the vertex black, the margin in front of the eyes and the clypeus flavous, labrum black; antennæ extending nearly to the middle of the elytra, dark fulvous, the third and fourth joints equal; thorax three times broader than long, flavous, the sides rounded, the anterior angles slightly produced outwards, the surface rather convex, flavous, shining; scutellum black; elytra very closely and finely punctured, flavous, a large subquadrate patch at the base not extending to either margin and indented at its anterior margin at the shoulders, violaceous black, this patch is followed immediately below the middle by a similar but a more elongate patch, which is sometimes strongly constricted at the middle, or if entire encloses a small spot of the ground-colour.

Hab. Peru.

From other nearly similarly coloured species the present one may be distinguished by the shape of the elytral markings, the anterior one of which shows a short encroachment of the ground-colour near the shoulders, and the posterior mark a semi-division at the middle in one specimen or an inclination to divide in the other. I believe that the shape of these markings and their dark violaceous colour constitute a specific distinction; none of the dark patches quite extend to either margin, but are divided at the middle by a very narrow band of the ground-colour.

The species seems allied to *Æ. biloba*, Illig.

ÆDIONYCHIS JAMAICENSIS, n. sp.

Flavous; antennæ robust, thorax strongly transverse, impunctate; elytra entirely impunctate, metallic violaceous blue.

Length 4 lines.

Head impunctate, flavous, shining, depressed between the eyes, the frontal elevations obsolete; palpi strongly thickened; antennæ robust, flavous, the third and fourth joints nearly equal; terminal joints slightly darker; thorax nearly four times broader than long, the sides strongly rounded, the anterior angles strongly thickened, but not produced, the sides with a comparatively narrow flattened margin, the surface shining, impunctate; elytra convex, with a short obsolete depression below the base, strongly convex, entirely impunctate, of a bright metallic violaceous colour; underside and legs flavous.

Hab. Jamaica.

Æ. jamaicensis is readily distinguished by its very transversely shaped thorax and the entirely impunctate and violaceous elytra.

It is the only species known to me from Jamaica.

ÆDIONYCHIS PRINCEPS (Clk. Catal.). (Plate XXXVIII. fig. 4.)

Widened posteriorly, black; thorax impunctate, black, the sides flavous; elytra metallic blue, rugose and finely punctured, the apex flavous.

Length 3 lines.

Head with a few fine punctures, blackish, the eyes rather closely approached, frontal elevations oblique, clypeus flavous; antennæ slender, extending beyond the middle of the elytra, black, the fourth joint slightly longer than the third, all the joints rather elongate and pubescent; thorax strongly narrowed in front, the sides moderately rounded, the anterior angles thickened but scarcely produced outwards, the disc impunctate, black, the lateral margins flavous, posterior margin perfectly straight; scutellum black; elytra rugose and finely punctured, metallic blue, a triangular spot at the apex flavous, the outer edge of the epipleuræ flavous, the inner portion black; underside and legs black.

Hab. Brazil or Bogotá.

Clark gives Brazil as the habitat of this species; a specimen in my collection has Bogotá as the locality attached to it, but I am unable to say whence I obtained it. The species may be recognized by the rugose elytra and the colour of the thorax.

ÆDIONYCHIS PERUVIANA, n. sp.

Flavous, the intermediate joints of the antennæ black; head and thorax impunctate; elytra extremely finely punctured, bluish black, the apex flavous.

Length 3 lines.

Head flavous, impunctate, rather flattened, the frontal elevations feeble; the antennæ not extending to the middle of the elytra, the lower four joints and the apical one flavous, the others black, third and fourth joints equal; thorax much narrowed at the middle, the sides strongly widened, their margins nearly straight, the anterior angles acutely produced but not dentiform, the surface impunctate, flavous; scutellum black; elytra widened at the middle, the disc extremely finely and rather closely punctured, bluish black, the extreme apex in shape of a narrow transverse band, flavous; elytral epipleuræ, the underside, and legs flavous.

Hab. Peru.

Allied in coloration to *Æ. hōyiei*, Jac., but the antennæ are of different colour, the thorax differently shaped, and the elytra of a blackish blue.

ÆDIONYCHIS BESKII (Clk. Catal.).

Black, the sides of the head and the thorax flavous; elytra black, finely punctured, the extreme lateral margin and a spot at the apex flavous.

Length 3 lines.

Head black, the extreme base with a few punctures, the space surrounding the eyes and the sides of the clypeus flavous; antennæ not extending to the middle of the elytra, black, the lower three joints and the apical one obscure piceous; thorax rather strongly convex, three times broader than long, the sides strongly rounded in front, the anterior angles not produced outwards, the sides with a broadly flattened margin, posterior margin sinuate at each side, the surface impunctate, flavous; scutellum black; elytra very finely but not very closely punctured, with a double row of deeper punctures within the shoulders, black, the extreme and thickened lateral margin, as well as the epipleuræ and a rounded spot at the extreme apex, flavous; some rows of deeper punctures also accompany the lateral margin; underside and legs black; sparingly pubescent.

Hab. Brazil.

Allied in coloration to *E. extrema*, Har., from Mexico, but in that species the thorax has mucronate angles, the epipleuræ within as well as the underside and legs are piceous, and the elytra are blue.

EDIONYCHIS APICATA (Clk. Catal.). (Plate XXXVIII. fig. 9.)

Black, the sides of the thorax flavous, the surface impunctate; elytra dark violaceous or purplish, impunctate, the apex with a round flavous spot.

Length 3 lines.

Head impunctate, black, shining, the frontal elevations entirely wanting, carina acute, palpi flavous; the antennæ not extending to the middle of the elytra, black, the first joint stained with fulvous, the apical one entirely of that colour, the second and third joints very short, subequal; thorax with the anterior margin deeply concave, the anterior angles very prominent but not produced outwards, the sides evenly rounded, the surface impunctate, black, shining, the sides broadly pale flavous; scutellum black; elytra obscure metallic purplish or violaceous, impunctate, the apex of each elytron with a round flavous spot; underside and legs black.

Hab. Brazil.

This species may not only be recognized by its coloration, but by the absence of any frontal elevations on the head and by the short second and third joints of the antennæ.

EDIONYCHIS MOROSA, n. sp.

Black, opaque, impunctate, thorax and elytra narrowly margined with flavous.

Length 3 lines.

Of a uniform black, opaque colour; the head impunctate, the frontal tubercles narrowly transverse; the antennæ black, short, the third and fourth joints equal; thorax twice as broad as long, the sides rounded in front, straight at the base, anterior angles produced forwards, without acute tooth, rather blunt, the surface

entirely impunctate, black, opaque, all the margins narrowly flavous, the sides but narrowly flattened; scutellum black; elytra without any punctuation, of exactly similar coloration as the thorax; underside and legs black.

Hab. Rio Grande do Sul, Brazil.

This species will be easily known by the sombre coloration, the proportionally long thorax, and the entire absence of any sculpturing.

EDIONYCHIS FASCIATICOLLIS (Clk. Catal.). (Plate XXXVIII. fig. 5.)

Black or piceous; thorax fulvous, with a transverse black band, impunctate: elytra flavous, a transverse band at the base, angulate at the shoulders, another broader band below the middle, widened at the suture, and a spot at the apex black or fulvous.

Length 3 lines.

Head with a few fine punctures between the eyes, black, rather flattened, the frontal elevations obsolete, carina short and thick; antennæ extending to the base of the elytra, black, the basal three joints dark fulvous, third joint slightly longer than the second but a little shorter than the fourth joint; thorax with the anterior and posterior margins rounded, parallel, the sides strongly rounded, the anterior angles slightly produced outwards, the surface impunctate, fulvous with a black transverse band, not extending to the sides, the edges of this band irregularly notched; scutellum black: elytra wider at the base than the thorax, widened at the middle, finely and closely punctured, flavous, with a narrow transverse black band at the base which turns downwards at the shoulders to about one third the length of the elytra, but does not extend to the lateral margin; another broader band is placed below the middle, this band extends quite to the sides, widens at the suture, and has the anterior and posterior margins deeply sinuate or dentate, it is connected by the suture with a small spot at the extreme apex: underside and legs black.

Hab. St. Paulo, Brazil, also Bolivia.

The band at the thorax is in some specimens divided into two spots, and the elytral bands may be of bluish-black or fulvous colour; their shape and position will help to distinguish the present species from others having transverse bands.

EDIONYCHIS BRUNNEOFASCIATA, n. sp. (Plate XXXVIII. fig. 8.)

Below fulvous, above testaceous, head fulvous; thorax scarcely perceptibly punctured, testaceous; elytra very finely and closely punctured, testaceous, two elongate spots at the base and a transverse band at the middle, not extending to the sutural or lateral margin, pale brown.

Length 4 lines.

Head fulvous, shining, with a few punctures near the eyes and a deep transverse groove between the latter, frontal tubercles transverse, strongly raised, carina and clypeus also strongly swollen;

antennæ fulvous or fuscous, the third joint slightly shorter than the fourth; thorax strongly transverse, the sides straight at the base, strongly rounded in front, the anterior angles produced outwards into a short somewhat truncate tooth, the surface with a few extremely minute punctures, testaceous; scutellum fulvous; elytra closely and finely punctured, pale testaceous, an elongate spot on the shoulders, a more rounded one at the suture near the scutellum, and a transverse band at the middle pale fulvous; underside and legs dark fulvous or piceous.

Hab. Bolivia.

EDIONYCHIS FUSCOANNULATA, n. sp. (*nigropunctata*, Clk. Catal.).
(Plate XXXVIII. fig. 6.)

Dark fulvous; thorax flavous, with a few fine punctures; elytra closely and strongly punctured, chestnut-brown, each with six flavous spots margined with black (1.2.2.1).

Length 4 lines.

Of strongly convex shape, the head punctured near the eyes, fulvous, frontal tubercles transverse, labrum piceous; antennæ short, black, the lower three joints fulvous, third joint slightly longer than the fourth, the following joints equal; thorax scarcely narrowed in front, the sides straight at the base, rounded anteriorly, anterior angles slightly produced outwards, the surface with a few fine punctures, flavous; scutellum fulvous; elytra rather strongly and very closely punctured, chestnut-brown, a round spot at the middle of the base, two before and two below the middle, placed transversely and slightly oblique, and another spot at the apex, flavous, margined with fuscous; underside and legs dark brown, pubescent.

Hab. Bahia.

The position, number, and the colour of the elytral spots will distinguish this species; the name of *nigropunctata* given by Clark being misleading, I have altered it.

EDIONYCHIS MULTOMACULATA (*brunneicollis*, Clk. Catal.).

Black; thorax flavous, with seven black spots; elytra black, with a very narrow discoidal and lateral flavous stripe, connected at the apex by a small transverse branch, opaque, nearly smooth.

Length $2\frac{1}{2}$ lines.

Head greenish black, coarsely punctured round the eyes; antennæ very short, black, the third joint only half the length of the fourth; thorax more than twice as broad as long, pale flavous, very finely and sparingly punctured, the sides strongly rounded, with a narrow flattened margin, the anterior angles not produced into a tooth, the disc with four black spots placed transversely, another one near the base at the middle and a smaller spot at each side, there are also two narrow black markings at the sides of the anterior margin; scutellum and elytra bluish black, opaque, nearly impunctate except at the base, where a few very

minute punctures are visible, a narrow longitudinal stripe near the suture from the base to the apex, the extreme lateral margin joining the other stripe at the apex, flavous, these stripes are further connected by a very short transverse band near the apex which includes a spot of the ground-colour; elytral epipleuræ black within, flavous at the outer edge; underside and legs black.

Hab. Brazil.

The many-spotted thorax, the opaque colour of the elytra, and the apical markings will separate this species from its allies. The name of *Æ. brunneicollis* given to this species by Clark having no reference to it, I have altered it.

ÆDIONYCHIS ADVENA (Clk. Catal.).

Entirely obscure testaceous, the head and thorax impunctate; elytra closely punctured, with an obsolete longitudinal discoidal stripe not extending to the apex and another extremely faint stripe nearer the suture.

Length $1\frac{1}{2}$ line.

A very small species of unattractive appearance, obscure testaceous or fulvous, the head impunctate, the antennæ fuscous, the lower three or four joints obscure fulvous; thorax rather more than twice as broad as long, the sides but slightly rounded, the anterior angles thickened but not produced, the surface with a rather distinct transverse sulcus near the base, impunctate or with a few very fine punctures; elytra very closely and rather strongly punctured, the shoulders prominent, the disc with an obscure piceous stripe not quite extending to the apex and a similar but scarcely perceptible stripe near the suture; epipleuræ, underside, and legs coloured as above.

Hab. Brazil, Rio Janeiro.

Clark was uncertain as to the habitat of this species, but two specimens named by Clark and formerly contained in the Baly collection are labelled Rio Janeiro.

ÆDIONYCHIS TURPIS (Clk. Catal.).

Black, the sides of the thorax and the base of the femora flavous; thorax nearly impunctate; elytra extremely minutely punctured, flavous, the extreme apex black.

Length $2\frac{1}{2}$ lines.

Head impunctate, the vertex shining, black, eyes large, frontal elevations transverse, strongly raised, carina acute, convex, the clypeus and the labrum flavous; antennæ rather slender, black, the lower three joints flavous below and partly above, third and fourth joints equal, the eleventh with a short appendage or twelfth joint; thorax three times broader than long, the sides very strongly rounded and flattened, the anterior angles not produced outward; the disc black, shining, very minutely punctured when seen under a strong lens, the sides, as far as the flattened portion, flavous;

scutellum black; elytra very closely and slightly more strongly punctured than the thorax, widened at the middle, with a narrow flattened margin, flavous, the extreme apex with a transverse black spot; below black, the prosternum and the base of all the femora flavous.

Hab. Upper Amazons.

GEDIONYCHIS PARDALIS, n. sp. (Plate XXXVIII. fig. 1.)

Dark fulvous, the vertex, antennæ, the scutellum, and the tibiæ blackish; thorax extremely minutely punctured; elytra closely and strongly punctured, fulvous, a spot on the shoulders, another near the scutellum, a transverse spot below the middle, and two small ones near the apex, black.

Length 4 lines.

Head punctured round the eyes, the vertex greenish black, the lower portion fulvous, labrum and palpi piceous; antennæ black, joints three and four nearly equal; thorax three times broader than long, the sides straight at the base, rounded in front, the anterior angles slightly dentiform, the sides broadly flattened, the surface very finely punctured, only visible under a strong lens; scutellum black; elytra rather strongly and closely punctured, each with five small black spots, of which one is placed on the shoulder, another near the suture below the scutellum, the third, of transverse and oblique shape, below the middle, and two very small spots placed transversely near the apex; underside and legs dark fulvous, the anterior tibiæ obscure piceous, abdominal segments rather closely and distinctly punctured, with some yellowish pubescence.

Hab. San Paulo, Brazil.

GEDIONYCHIS VIGINTINOTATA (Clk. Catal.). (Plate XXXVIII. fig. 10.)

Black, the terminal segments of the abdomen flavous, above dark greenish, subopaque; thorax impunctate, with six flavous spots, anteriorly and posteriorly; elytra with seven flavous spots each (2. 2. 2. 1), these finely punctured, rest of surface opaque, impunctate.

Length $2\frac{3}{4}$ lines.

Head flat, opaque, with a few punctures near the eyes only, dark greenish, the frontal tubercles and carina almost entirely wanting; antennæ short and stout, black, the joints scarcely longer than broad, slightly thickened towards the apex; thorax scarcely more than twice as broad as long, the sides straight at the base, slightly rounded anteriorly, the anterior angles not produced, rather blunt, the sides with a narrow reflexed margin, the surface entirely impunctate, more shining than the elytra, the anterior margin with three small bright flavous spots, one at each angle, the third at the middle, the base with three similar spots placed in the same positions; scutellum broader than long,

blackish; elytra of silky, opaque appearance, with four flavous spots placed in a row near the suture and three others at the lateral margin, these spots show some fine punctuation; underside and legs black, the last three abdominal segments flavous.

Hab. Rio Grande, Brazil.

This is a curiously marked species and not difficult to recognize; the thorax has scarcely any flattened sides, but a narrow reflexed margin, and is entirely impunctate; the short antennæ, silky elytra, and the spots will further assist in the recognition of the species.

ÆDIONYCHIS SEXSIGNATUS (Clk. Catal.). (Plate XXXVIII. fig. 2.)

Fulvous or piceous, the head, antennæ, and the legs black; thorax flavous, impunctate; elytra greenish or violaceous black, each with a round spot at the base, a transverse band at the middle, another spot below the latter, and a short lateral stripe near the apex, as well as the lateral margin, flavous.

Length 3 lines.

Head impunctate, black, the clypeus flavous; antennæ black, the lower two joints obscure piceous below, the third joint slightly shorter than the fourth; thorax rather convex, the sides rounded, with a broad flattened margin, the anterior angles thickened and produced forward, anterior and posterior margins nearly straight, the surface impunctate, flavous; scutellum black; elytra not perceptibly punctured, black or bluish black, a round spot near the scutellum, a similar one near the apex and close to the suture, a narrow oblique short stripe joining the similarly coloured lateral margin below the posterior spot, and a narrow transverse band at the middle flavous; legs black or piceous.

Hab. Colombia.

Closely allied to *Æ. 10-guttata*, Fab., but the shape and the position of the elytral spots different, as well as the nearly smooth elytra.

ÆDIONYCHIS AFRICANA, n. sp. (Plate XXXVIII. fig. 12.)

Head, the apical joints of the antennæ, and the breast black; thorax testaceous, finely punctured; elytra testaceous, the suture, a spot at the apex, a spot at the base, and an elongate mark at the middle, black; legs fulvous, spotted with black.

Length 2 lines.

Of nearly parallel and narrow shape; head broad, black, punctured near the eyes; the antennæ comparatively widely distant, separated by a smooth space; palpi piceous, the apical joint acutely pointed, the penultimate one moderately incrassate; antennæ short, the lower four joints testaceous, the others black, third joint distinctly longer than the fourth, terminal joints transversely widened; thorax three times broader than long, the sides strongly rounded, the anterior margin straight, the posterior one sinuate at the sides and at the middle, anterior angles oblique, posterior ones acute, the surface with a distinct sinuate transverse sulcus near the base,

finely and remotely punctured, the sides broadly flattened; scutellum broader than long, black; elytra rather strongly and closely punctured anteriorly, the punctures nearly absent below the middle, testaceous, a rounded spot at the base, a more elongate mark pointed posteriorly, placed at the middle of the disc and the suture, connected with a round spot at the apex, black; abdomen and legs flavous, the knees, base of the tibiæ, and the apex of the posterior femora black, breast black, posterior femora fulvous, posterior tibiæ emarginate at the apex, the posterior claw-joint strongly subglobular.

Hab. Africa, Sierra Leone.

This small species differs in many respects from its South-American congeners: the short antennæ, their incrassate terminal joints and the broad space dividing them, the thoracic sulcus, and the general shape of the thorax are not generally found in this genus: these differences are, however, more those of degree, and the species may well be included in *Ædionychis*, which contains already several other African forms.

ÆDIONYCHIS SIAMENSIS, n. sp. (Plate XXXVIII. fig. 11.)

Black, thorax nearly impunctate, the sides flavous; elytra finely punctured and slightly rugose anteriorly, flavous, a spot on the shoulder and a transverse band below the middle black.

Length $3\frac{3}{4}$ lines.

Head with a few punctures near the eyes, black, shining, the frontal tubercles transverse, strongly raised; antennæ slender, not extending to the middle of the elytra, black, third and fourth joints equal; thorax three times broader than long, the sides strongly rounded and flattened, the surface with a few fine punctures and a transverse depression near the base at each side, shining, black, the flattened sides flavous; scutellum black; elytra very finely and closely punctured, the punctures nearly obsolete near the apex, flavous, the suture, immediately below the scutellum, a spot on the shoulders, and a broad, strongly curved, transverse band below the middle black; underside and legs black.

Hab. Siam.

ASPLERA HAROLDI, n. sp.

Flavous, the vertex of the head, the antennæ, and the tibiæ and tarsi black; thorax impunctate; elytra metallic green or blue, impunctate.

Length 3 lines.

Head flavous, the vertex and the labrum black, the space between the eyes with a deep sinuate, strongly punctured groove, the frontal tubercles broad, moderately strongly raised; palpi flavous, the last joint piceous; antennæ extending slightly beyond the middle of the elytra, black, the basal joint flavous below, third joint as long as the fourth; thorax about twice as broad as long, the sides rounded at the middle, with a very narrow margin, the

anterior angles produced and thickened but not toothed, the surface rather convex, impunctate, flavous, posterior margin slightly sinuate at the sides; scutellum black; elytra with a depression below the base, very bright metallic green, impunctate; underside and femora flavous, the tibiæ and tarsi black.

Hab. Amazons, also Bolivia.

Allied to *A. xanthocephala*, Har., but the clypeus and the entire underside flavous, the elytra more brilliant metallic.

ASPILERA MELANOCEPHALA, n. sp.

Flavous, the head, antennæ, and tibiæ and tarsi black; thorax impunctate; elytra bluish black, impunctate.

Length $2\frac{1}{2}$ lines.

Head black, with a single puncture near the eyes, frontal tubercles transverse, rather feebly raised; clypeus strongly developed, black, the sides flavous; palpi strongly thickened; antennæ rather long, black, all the joints, the second one excepted, of nearly equal length; thorax more than twice as broad as long, the sides nearly straight, narrowly margined, the anterior angles thickened but not toothed, the surface impunctate, pale flavous; scutellum black; elytra with a small depression below the base, bluish black, impunctate; underside and femora flavous, tibiæ and tarsi black, the first joint of the posterior tarsi as long as the following two joints together.

Hab. Amazons.

Principally distinguished by the colour of the head and that of the clypeus.

ASPILERA CLARKI, n. sp.

Flavous, thorax rather narrow, scarcely margined, nearly impunctate, scutellum piceous; elytra impunctate, a transverse band at the base and another below the middle violaceous blue.

Length $2\frac{1}{3}$ lines.

Head pale fulvous, with a few punctures near the eyes, the latter large, the dividing space scarcely broader than their diameter, frontal tubercles trigonate; antennæ fulvous, extending to the middle of the elytra, the basal two joints shining, the others pubescent, third and following joints equal, elongate; thorax scarcely more than twice as broad as long, the sides but slightly rounded, narrowly flattened, anterior angles produced into a small tooth, the surface with some very minute punctures when seen under a very strong lens; scutellum piceous; elytra with a broadly flattened margin, sculptured like the thorax, flavous, with a transverse band slightly widened at the suture and not extending to the sides, and a similar band below the middle, violaceous blue; underside and legs flavous, the apex of the femora generally darker or stained with piceous, the first joint of the posterior tarsi as long as the following joints together, claw-joint moderately swollen.

Hab. Amazons.

The coloration of this species resembles many species of *Ædionychis* and also some of the present genus, especially *A. 4-maculata*, Clark, and *A. oblecta*, Baly, but the shape of the thorax and other details must be taken into account to separate it; the thorax in *A. clarki* is proportionately narrow and the flattened portions of the sides are not well separated from the rest of the surface; the head is rather darker in colour and narrowed between the eyes; the first band of the elytra is slightly widened at the suture and extends to about one third of their length, the posterior band is quite straight and of the same width as the basal one. The long metatarsus of the posterior legs and the but moderately swollen claw will separate the species from any true *Ædionychis*.

ASPHÆRA PLUMBEA, n. sp.

Flavous, the head fulvous, the antennæ black; thorax impunctate, narrowly margined; elytra scarcely perceptibly punctured, metallic bluish black.

Length 4 lines.

Head fulvous at the vertex, the latter with a few fine punctures near the eyes, frontal tubercles broadly oblique, clypeus flavous; antennæ rather long, black, the basal joint flavous below, the second joint very short, the third and fourth joints equal; thorax about twice as broad as long, the sides moderately rounded, very narrowly margined, anterior margin deeply concave, anterior angles thickened, not produced, the surface impunctate, flavous; scutellum black; elytra almost impunctate, of a leaden-blue colour, very shining; underside and femora flavous, the tibiæ and tarsi black, the claw-joint but moderately swollen.

Hab. Venezuela.

Closely allied to *A. xanthocephala*, Har., but larger, without the black markings of the head and breast, and of a darker bluish colour.

EXPLANATION OF PLATE XXXVIII.

- Fig. 1. *Ædionychis pardalis*, p. 627.
 2. — *sexsignatus*, p. 628.
 3. — *nigroscutata*, p. 610.
 4. — *princeps*, p. 622.
 5. — *fasciaticollis*, p. 624.
 6. — *fuscoannulata*, p. 625.
 7. — *quadripustulata*, p. 612.
 8. — *brunneofasciata*, p. 624.
 9. — *apicata*, p. 623.
 10. — *vagintinotata*, p. 627.
 11. — *siamensis*, p. 629.
 12. — *africana*, p. 628.

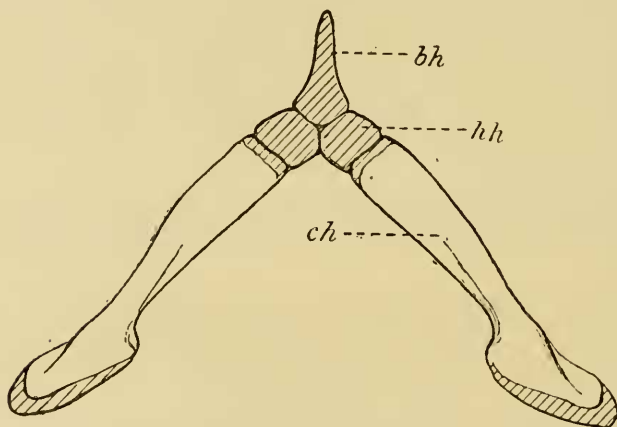
2. On the Hyoid Arch of *Ceratodus*. By W. G. RIDEWOOD, B.Sc., F.L.S., Lecturer on Biology at St. Mary's Hospital Medical School.

[Received October 8, 1894.]

Since the discovery by Huxley (5) of the hyomandibular cartilage of *Ceratodus*, but little has been published in the way of a detailed description of the hyoid arch, and as the intermediate position occupied by the Dipnoi between the Fishes and Amphibia renders a minute knowledge of every part of their anatomy of the greatest importance, the following short contribution may, by collating the views of various observers, be of some assistance to the student of ichthyopsidan anatomy.

The most conspicuous element of the hyoid arch is the large ossified *ceratohyal* (figs. 1 and 2, *ch*), the extremities of which remain cartilaginous.

Fig. 1.



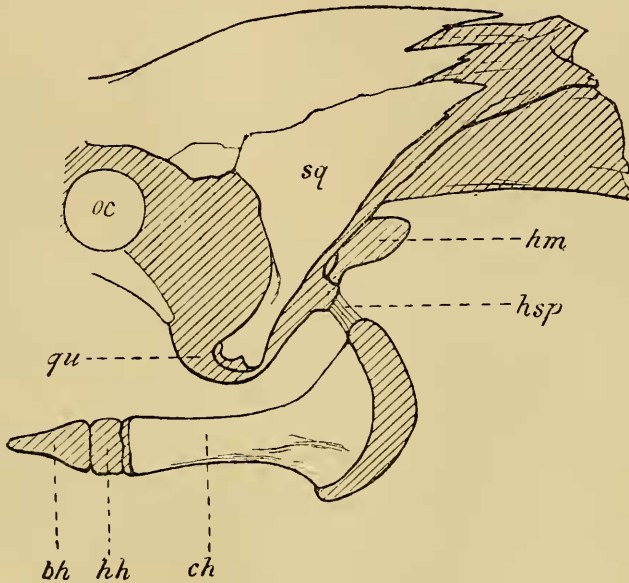
Ceratodus forsteri.—Hyoid arch, ventral view. (The hyomandibular is not shown.) *ch*, ceratohyal; *hh*, hypohyal; *bh*, basihyal.

Towards its anterior end it is nearly circular in section, but proximally it becomes vertically compressed, with a delicately curved posterior edge ending abruptly against the terminal cartilage.

The cartilage of the distal or anterior end articulates by a flat surface with the hypohyal.

The *hypohyal* (figs. 1 and 2, *hh*) is paired, cartilaginous, and isodiametric, and the two hypohyals are applied to one another in the middle line by flat, vertical, articular surfaces which open out in front to receive the wedge-shaped posterior extremity of the basihyal.

Fig. 2.



Ceratodus forsteri.—Hinder portion of the skull with the hyoid arch; left side. The opercular and interopercular bones are removed. *bh*, basihyal; *hh*, hypohyal; *ch*, ceratohyal; *hm*, hyomandibular; *hsp*, hyosuspensorial ligament; *sq*, squamosal or pre-opercular; *qu*, quadrate condyle; *oc*, eye-capsule.

The *basihyal* (figs. 1 and 2, *bh*) is a median unpaired cartilage which tapers off to a blunt point in front.

In Günther's (4) original description of *Ceratodus* the hypohyals are called basihyal, while the figures, and the words (p. 526) "the basihyal is short, thick, cartilaginous, interposed between the ends of the ceratohyals and the acutely conical glossohyal," fail to indicate the paired nature of these cartilages. Seeing, however, that they are paired and that the term basihyal is always applied to a median copula, and seeing that they are, from their relation to the ceratohyal, evidently homologous with the hypohyals of the

Ganoid fishes and Rays, the application of this name needs no further support.

The term basihyal is here applied to the median conical cartilage in preference to Günther's original name glossohyal, because the cartilage is a ventral copula, corresponding in all essential respects with the basihyal of the Sharks, and it is with the Elasmobranch and Ganoid, rather than with the Teleostean fishes, that comparisons should be instituted.

The chief feature of interest in connection with these three anterior cartilages is the contact of the hypohyals in the median plane, in addition to their articulation with the basihyal.

Brühl (2) (Taf lxi. Fig. 1) follows Günther in calling the hypohyal the basihyal, but in another place (Taf lxxvii. Fig. 1) he describes it as the epiphysis of the ceratohyal¹. This, in addition to being an inconsistency, is an error, since there is a cartilaginous epiphysis to the ceratohyal in addition to the hypohyal cartilage in question, assuming even then that the term epiphysis may be employed in describing the skeleton of animals other than mammals.

Brühl also claims to have discovered a small median *urohyal*, projecting back from the hypohyals and lying between the anterior ends of the ceratohyals. There is certainly a small rod of cartilage in this situation, but, from its position between the lower ends of the first ceratobranchials, it is more reasonable to regard it as a basibranchial than as a constituent of the hyoid arch.

On comparing the hyoid arch of *Ceratodus* with that of a Shark, but little doubt can be entertained as to the homology existing between the elements called in each case the ceratohyal; the proportionate size, position, and the relations to the hyoid demi-branchia and to the mandibular and branchial arches, the nature of the ligamentous attachment to the mandible (seen better in *Protopterus* than in *Ceratodus*), all point to this conclusion. So that, arguing along these lines, the small cartilage (*Im*, fig. 2) closely bound to the cranial cartilage, if an element of the hyoid arch at all, is a much reduced representative of the well-developed and functional hyomandibular of the Shark, a view first propounded by Huxley (5), and which has not been challenged except by Brühl (2), who proposes to call this cartilage the "stylhyale," without, however, giving his reasons for the change.

Van Wijhe (12) accepts Huxley's determination, but in a footnote remarks:—"Es scheint mir jedoch nicht unmöglich, dass dieses Knorpelstück ein *Interhyale* repräsentire."

In a revolutionary paper by Pollard (10), this cartilage is regarded as an opercular. This author, however, elects to compare the skull of *Ceratodus* with that of the Siluroids, which are by no means the most typical nor the most primitive of the Teleostei;

¹ Brühl calls the ceratohyal the epihyal, and is supported by so recent a writer as Teller (11).

and on comparing his figs. 3 and 4 it will be seen that the hyoidean nerve passes in front of the hyomandibular in *Silurus* and behind the suspensorium of *Ceratodus*, which in his figure he separates from the palatine cartilage by a firm line and designates the "hyomandibular." Nerves, from their early distribution, may safely be employed as tests of homology of parts, and the spiracle, being as it is a visceral cleft, has claims of equal importance, so that Pollard's deduction, drawn from his conclusion of the non-homology of the hyomandibular of Teleostei and Elasmobranchii, that the spiracle and the hyoidean nerve are not constant in their relations to the hyomandibular, tends to falsify the premises. It is not, however, on this account to be assumed that the hyomandibular of Teleostei is here considered homologous with that of the Elasmobranchii, for, as first suggested by Parker, later researches may subsequently show their want of correspondence.

Seeing that accessory nodules of cartilage are so common as fringes to the opercular and interopercular bones and on the cranial ribs (as also in the Sturgeon), it might certainly be suspected that the "hyomandibular" of *Ceratodus*, lying as it does on the inner side of the operculum, belonged to this category, but its relation to the seventh nerve and to the ceratohyal, and its position between the quadrate cartilage and the first branchial arch, all point to its being a constituent of the hyoid arch.

Gadow (3) writes (p. 458):—"The outer surface of this hyomandibular remnant is loosely connected with the small cartilaginous operculum, which we know to be the result by fusion of the branchiostegal rays, carried by the hyomandibula."

The name opercular has hitherto been applied in *Ceratodus* to the large bone of the dermal series, situated behind the pre-opercular and fringed with accessory cartilages, and to re-apply the name, without apology or argument, to a small cartilage must necessarily lead to confusion.

There is no synovial articulation, in *Ceratodus*, between the hyomandibular and the opercular, on the inner surface of which it lies, such as occurs in the Teleosteans and the bony Ganoids. The anterior edge of the hyomandibular is united with the skull just where the cranium proper passes into the suspensorium; and the distance between this spot and the auditory capsule, in the vicinity of which the hyomandibular of fishes usually articulates, marks the extent of the reduction which the upper part of the hyoid arch has undergone. This hyomandibular cartilage was apparently overlooked by Günther (4), who figures (pl. xxxiv. fig. 3, r) a tubercle for the suspension and articulation of the hyoid arch.

A comparison of the original specimen with this figure, which by the kindness of Dr. Günther I was allowed to make, shows that this is, as he states, a protuberance of the suspensorium for the attachment of the ligament suspending the ceratohyal; and

Huxley (5) was therefore unduly confident in assuming that this tubercle was the hyomandibular cartilage which he had discovered, and in writing (p. 34) that "this is neither a process of the suspensorium, nor does it articulate with, nor take the principal share in, suspending *Hy*, which is Dr. Günther's 'hyoid arch.'"

The hyomandibular is still present in this specimen, and lies dorsally to the "tubercle," to which a portion of the ligament still remains attached.

The lower end of the hyomandibular cartilage, which Huxley calls the symplectic, is not embedded in the hyosuspensorial ligament, but, as a careful dissection will show, is articulated to the dorsal surface of the suspensorial tubercle, whereas the hyosuspensorial ligament is attached to its posterior surface at a slightly lower level.

Gadow's replacement of Huxley's accurate term "hyosuspensorial ligament" by "ligamentum hyomandibulo-hyoideum" is thus singularly unfortunate.

The hyomandibular is not connected directly with the ceratohyal, but indirectly by means of a process of the palato-quadrate cartilage, so that, by a slight stretch of the imagination, the skull of *Ceratodus* might be regarded as partially hyostylic; the bulk of the evidence, however, is distinctly opposed to this view.

Brühl (2) (Taf. lxiii. Fig. 6), in a figure said to be copied from Huxley, shows a ligament running from the ceratohyal to the mandible and to the opercular, but not to the suspensorium nor to the hyomandibular, and in his original figures he is hardly more fortunate.

Assuming the determination of the ceratohyal and hyomandibular correct, it is worthy of note that the region of union of these elements, in the Sharks just behind the mandibular articulation, is here, in *Ceratodus*, raised considerably above the level of the quadrate condyle of the upper jaw (see fig. 2).

The shape of the hyomandibular is by no means constant, but is subject to great individual variation, and this even on the right and left sides of the same skull.

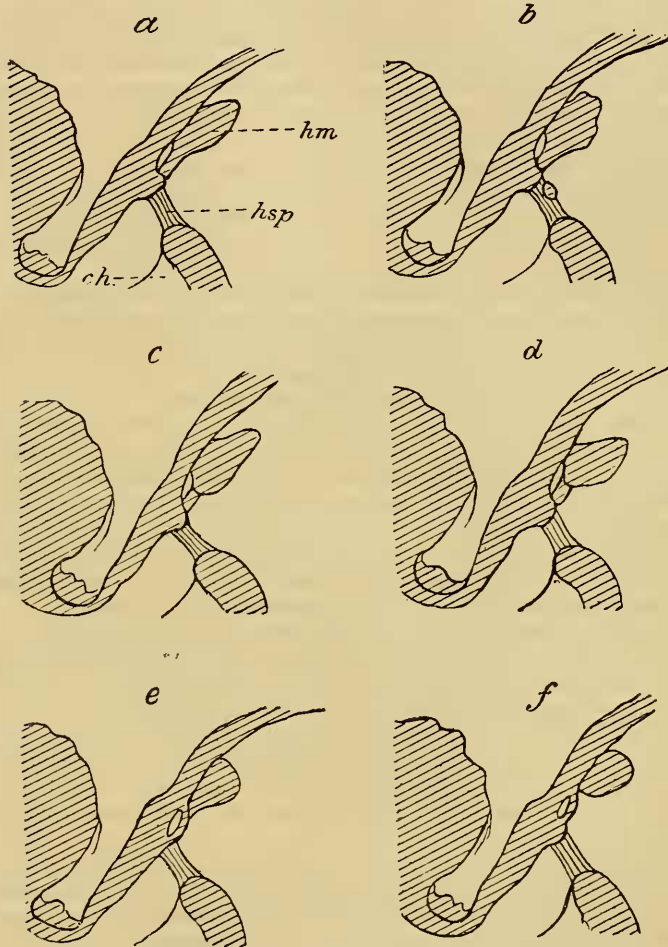
By far the commonest form is that shown in fig. 3, *a* (p. 637). The cartilage is rhombic in shape and applied by its anterior edge to the cranial cartilage, while a ventral process, separated from the skull by a space for the passage of the hyoidean branch of the seventh nerve, is attached to the upper surface of the suspensorial tubercle.

In one case examined (fig. 3, *b*) there is in addition a nodule of cartilage in the hyosuspensorial ligament which may possibly have the value of an interhyal. A similar nodule is mentioned by Pollard (10), but not figured.

The two sketches, fig. 3, *c* and *d*, show what variation may occur in the relative lengths of the vertical and horizontal diameters of the cartilage, and also that when the longer diameter is horizontal the extent of the attachment to the cranium is reduced to a minimum.

In each of these cases the ventral process mentioned above is segmented off as a separate cartilage. This may possibly be a symplectic from its position, as suggested by Huxley (5), but, in

Fig. 3.



Ceratodus forsteri.—The hyomandibular and adjacent parts.
Letters as before.

view of the great variability exhibited by the hyomandibular, it is doubtful whether any importance can be attached to its independence. In the last two cases (fig. 3, e and f) the aperture for the

hyoidean nerve, instead of lying between the hyomandibular and the cranium, penetrates the cranium itself, and the hyomandibular is separated by a wide gap from the tubercle to which the hyosuspensorial ligament is attached.

It is not impossible that the bar of cartilage behind the nerve-aperture is the symplectic process, which has fused above with the cranium and below with the tubercle (which latter in the specimen represented in fig. 3, *e*, is practically obsolete); but it is more reasonable to suppose that the nerve has been enclosed by the posterior union of the edges of the notch in the cranial cartilage in which it originally ran, parallel cases of the enclosure of nerves and blood-vessels being not uncommon.

Little doubt can be entertained of the fact that the whole branchial and hyoid system has become reduced in *Ceratodus* in relation with the partial adoption of pulmonary respiration; and the hyomandibular thus furnishes another and a very interesting example of individual variation in vestigial structures.

This reduction of the branchial skeleton is even more pronounced in *Protopterus*, where the hyomandibular is absent and where only the second and third branchial arches have epibranchial elements, the other four consisting of slender ceratobranchials only.

The hyoid gill-filaments in *Ceratodus* are set on the ventro-internal edge of the ceratohyal, and the series extends backwards and upwards, internal to the hyosuspensorial ligament, but stops short for about a quarter of an inch in the region of the hyomandibular and is continued again in a line running back, parallel to the long axis of the body, to meet the upper end of the series of gill-filaments of the first branchial arch. Thus not only is the continuity of the gill broken in the region of the hyomandibular, but the direction of the series of filaments becomes changed.

The gill-rakers, on the other hand, form a continuous series running along the upper and inner edge of the ceratohyal, curving forwards and upwards in front of the hyomandibular, and terminating at the upper extremity of the first branchial cleft.

While the series of hyoid gill-rakers and gill-filaments are close together along the inner surface of the ceratohyal, they become widely divergent above, the upper end of the first branchial arch being situated some little distance behind the pharyngeal opening of the cleft.

The upper gill-filaments are not supported by any part of the hyoid skeleton, but simply project from the mucous membrane and readily come away when the latter is stripped off, and the lower filaments, although supported by the ceratohyal, are but very feebly attached to it and leave no marks on removal, the gill-filaments of *Ceratodus* not being supported by gill-rays.

As before mentioned, the hyoid arch of *Ceratodus* is less reduced than in the other living Dipnoi.

In *Protopterus* there is a pedicle for the attachment of the hyosuspensorial ligament, situated much as in *Ceratodus*, and to the inner side of this short ligament lies a much longer and whiter

ligament, more strongly developed than in *Ceratodus*, running upwards and inwards from the upper and inner end of the ceratohyal to the base of the skull at the side of the parasphenoid.

There is no basihyal nor hypohyal, but the lower ends of the ceratohyals are connected by ligament.

No cartilage which might correspond with the hyomandibular of *Ceratodus* is to be distinguished.

Owen (7), evidently describing an improperly articulated skull, writes: "a strong cylindrical and almost straight *styloid* bone is articulated by a somewhat compressed and expanded upper extremity to the cartilaginous petrous element of the temporal; it extends downwards and forwards, parallel with the *os tympanicum*¹ and is articulated to the upper part of the expanded posterior extremity of the ceratohyoid bone." The ceratohyal is named correctly, but is unfortunately articulated with the lower end of the cranial rib, which, in the figure, is made to point forwards instead of backwards and is called "styloid."

Writing later (8) in 1866 he adopts Bischoff's (1) view that this latter bone is the suspensor of the pectoral girdle, for, in his fig. 41. no. 51, it is called scapula and is articulated at its lower end with the shoulder-girdle, which is called coracoid.

Two years later Parker (9) described it as the first pharyngo-branchial; and it was left to Günther (4) in 1871 to demonstrate that this bone, which had suffered such vicissitudes of nomenclature, is simply the first rib which has acquired a secondary connection with the skull.

There are no careful descriptions of the hyoid arch of *Lepidosiren*, but it may be concluded that it differs but little from that of *Protopterus*.

Brühl (2) (Taf. lxiii. Fig. 8, Punkt 2) speaks of an articular cavity in the postero-external border of the chondrocranium for insertion of the hyoid apparatus; and Hyrtl (6) states that the hyoid is attached to a blunt process of the quadrate, and that the ventral ends are united by a rigid synchondrosis and not by a ligament as in *Protopterus*.

Günther (4, p. 526) mentions the absence of basihyal and glossohyal (*i. e.* the elements named in this article the hypohyal and basihyal).

We may, happily, now look forward to more minute descriptions of the visceral skeleton of this once rare Dipnoan in the publications of the numerous investigators who are prosecuting their researches on the specimens recently collected by Dr. Bohls in Paraguay.

A careful examination of the hyoid system of living Dipnoi leads one to conclude that there is no connection between the reduction of the hyomandibular in these fishes and its adaptation as a secondary suspensorium in the Elasmobranchii (excluding the Holocephali) and the osseous fishes, and there appears to be very little evidence in support of Gadow's view (3, p. 459) that the reduction of the

¹ Pre-opercular.

hyomandibular has resulted from the loss of a suspensorial function.

It is unfortunate that the remains of extinct Dipnoi do not furnish any clue to the solution of this problem; but it is highly probable that the Dipnoi are derived from a stock in which the hyomandibular was as free from this suspensorial function as in the modern representatives of the group.

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2. BRÜHL, Zool. aller Thierklassen. Wien, 1880.
3. GADOW, Phil. Trans. 1888.
4. GÜNTHER, Phil. Trans. 1871.
5. HUXLEY, Proc. Zool. Soc. 1876.
6. HYRTL, Lepidosiren paradoxa. Prag, 1845, p. 12.
7. OWEN, Trans. Linn. Soc. xviii. 1839, p. 337.
8. OWEN, Anat. of Vert. vol. i. 1866, p. 83 and fig. 41.
9. PARKER, Monograph on Shoulder-girdle, Ray Soc. 1866.
10. POLLARD, Anat. Anzeiger, Bd. x. no. 1, 1894.
11. TELLER, Abh. d. k.-k. geol. Reich. Wien, Bd. xv. Heft 3.
12. v. WIJHE, Niederl. Archiv f. Zool. v. Heft 3, 1882, p. 295.

3. Third Report on Additions to the Batrachian Collection in the Natural-History Museum.¹ By G. A. BOULENGER, F.R.S.

[Received October 12, 1894.]

(Plates XXXIX. & XL.)

I. List of the Species, new or previously unrepresented, specimens of which have been added to the Collection since April 1890.

(An asterisk indicates type specimens.)

ECAUDATA.

1. *Rana limborgii*, Sclater f., P. Z. S. 1892, p. 344.—Karin hills (*Fea*).
- *2. *Rana palawanensis*, Blgr. Ann. N. H. (6) xiv. 1894, p. 85.—Palawan (*Everett*).
- *3. *Rana holsti*, Blgr. Ann. N. H. (6) x. 1892, p. 302.—Great Loo Choo Islands (*Holst*).
4. *Rana boylei*, Baird.—Marin Co., California (*Eigenmann*).
- *5. *Rana græca*, Blgr. Ann. N. H. (6) viii. 1891, p. 346.—Parnassos (*Krüper*); N. Morea (*Douglass*).
6. *Rana chrysoprasina*, Cope.—Costa Rica (*Underwood*).

¹ Cf. P. Z. S. 1890, p. 323.



3



1



2



4

Peter Smit del et lith

Mintern Bros. imp.

1. RANA QUECKETTII 2. PHRYNOBATRACHUS RANOIDES.
3. CASSINA OBSCURA. 4. HYLAMBATES MILLSONII.



- *7. *Rana quecketti*, Blgr., *infra*.—Natal (*Queckett*).
- *8. *Rana nyassae*, Gthr. P. Z. S. 1892, p. 558.—Nyassaland (*Johnston*).
- *9. *Rana johnstonii*, Gthr. P. Z. S. 1893, p. 620.—Nyassaland (*Johnston*).
- *10. *Rana tenasserimensis*, Slater f., P. Z. S. 1892, p. 345.—Tenasserim (*Indian Museum*).
11. *Rana lateralis*, Blgr. Ann. Mus. Genova, (2) v. 1887, p. 483.—Rangoon (*Fea*).
12. *Rana monticola*, And.—Darjeeling (*Gammie, Blanford*).
13. *Rana granulosa*, And.—Assam (*Peal*); Burma (*Limborg, Fea*).
- *14. *Rana varians*, Blgr. Ann. N. H. (6) xiv. 1894, p. 86.—Palawan (*Everett*).
- *15. *Rana nigrovittata*, Blyth.—Burma (*Theobald, Fea, Oates*).
- *16. *Rana oatesii*, Blgr. Ann. N. H. (6) ix. 1892, p. 141.—Toungoo (*Oates*); Bangkok (*Greening*).
- *17. *Rana hosii*, Blgr. Ann. N. H. (6) viii. 1891, p. 290.—Sarawak (*Hose, Everett*).
- *18. *Rana cavitimpanum*, Blgr. P. Z. S. 1893, p. 525.—N. Borneo (*Everett*).
19. *Rana whiteheadi*, Blgr. Ann. N. H. (5) xx. 1887, p. 96.—N. Borneo (*Whitehead*); Sarawak (*Everett*).
- *20. *Rana aluta*, Peracca, Boll. Mus. Tor. viii. 1893, no. 156, p. 12.—Madagascar (*Peracca*).
- *21. *Phrynobatrachus ranoides*, Blgr., *infra*.—Natal (*Queckett*).
- *22. *Rhacophorus liber*, Peracca, Boll. Mus. Tor. viii. 1893, no. 156, p. 14.—Madagascar (*Peracca*).
- *23. *Rhacophorus everetti*, Blgr. Ann. N. H. (6) xiv. 1894, p. 87.—Palawan (*Everett*).
- *24. *Rhacophorus macrotis*, Blgr. Ann. N. H. (6) vii. 1890, p. 282.—Sarawak (*Hose*); Balabac, Palawan (*Everett*).
25. *Rhacophorus colletti*, Blgr. P. Z. S. 1890, p. 36.—N. Borneo (*Everett*).
- *26. *Rhacophorus otilophus*, Blgr. P. Z. S. 1893, p. 527.—N. Borneo, Sarawak (*Everett*).
- *27. *Rhacophorus edentulus*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 840.—Celebes (*Sarasin*).
- *28. *Rhacophorus acutirostris*, Mocq. Le Natur. 1890, p. 163.—Mt. Kina Baloo (*Paris Mus., Everett*).
- *29. *Rhacophorus verrucosus*, Blgr. Ann. Mus. Genova, (2) xiii. 1893, p. 337.—Karin hills (*Fea*).
30. *Rhacophorus dulitensis*, Blgr. P. Z. S. 1892, p. 507.—Mt. Dulit, Sarawak (*Hose*).
- *31. *Rhacophorus feae*, Blgr. Ann. Mus. Genova, (2) xiii. 1893, p. 338.—Karin hills (*Fea*).
32. *Rhacophorus dennysi*, Blanf.—Foochow (*Rickett*).
33. *Rhacophorus madagascariensis*, Ptrs.—Madagascar.
- *34. *Ixalus travancoricus*, Blgr. Ann. N. H. (6) viii. 1891, p. 291.—Travancore (*Ferguson*).

- *35. *Ixalus longjercus*, Blgr. Ann. N. H. (6) xiv. 1894, p. 88.—Palawan (*Everett*).
- *36. *Ixalus carineusis*, Blgr. Ann. Mus. Genova, (2) xiii. 1893, p. 339.—Karin hills (*Fea*).
- *37. *Ixalus parvulus*, Blgr. l. c.—Karin hills (*Fea*).
38. *Ixalus pictus*, Ptrs.—N. Borneo (*Everett*).
39. *Ixalus latopalrnatus*, Blgr. Ann. N. H. (5) xx. 1887, p. 97.—N. Borneo (*Whitehead, Everett*).
- *40. *Chirixalus doria*, Blgr. Ann. Mus. Genova, (2) xiii. 1893, p. 341.—Karin hills (*Fea*).
- *41. *Phrynoderma asperum*, Blgr. l. c. p. 342.—Karin hills (*Fea*).
- *42. *Cassina obscura*, Blgr., *infra*.—Shoa (*Doria*).
- *43. *Hylambates millsonii*, Blgr., *infra*.—Mouths of the Niger (*Millson*).
- *44. *Sphenophryne celebensis*, F. Müll. Verh. nat. Ges. Basel, x. 1894, p. 841.—Celebes (*Sarasin*).
45. *Engystoma albopunctatum*, Bttgr. Z. f. Naturw. lviii. 1885, p. 240.—Paraguay (*Bohls*).
46. *Engystoma muelleri*, Bttgr. l. c. p. 241.—Paraguay (*Bohls*).
47. *Mantipus hildebrandti*, Ptrs. SB. Berl. Ac. 1883, p. 166.—Madagascar (*Peracca*).
48. *Phrynocara tuberatum*, Ptrs. l. c. p. 167.—Madagascar (*Peracca*).
49. *Elosia bufonia*, Gir.—Theresopolis (*Göldi*).
50. *Hylodes latrans*, Cope.—Texas (*Taylor*).
51. *Hylodes melanostictus*, Cope.—Monte Redondo, Costa Rica (*Underwood*).
52. *Hylodes urichii*, Bttgr. J. Trinid. Club, ii. 1894, p. 88.—Trinidad (*Caraciollo*).
- *53. *Leptodaetylus bufonius*, Blgr. Ann. N. H. (6) xiii. 1894, p. 348.—Paraguay (*Bohls*).
- *54. *Phanerotis fletcheri*, Blgr. P. Linn. Soc. N. S. W. (2) v. 1890, p. 593.—Dunoon, N. S. Wales (*Fletcher*).
55. *Nectophryne misera*, Mocq. Le Natur. 1890, p. 182.—Kina Baloo, N. Borneo (*Everett*).
- *56. *Nectophryne signata*, Blgr., *infra*.—Dutch Borneo (*Everett*).
- *57. *Nectophryne hosii*, Blgr. P. Z. S. 1892, p. 508.—Sarawak (*Hose, Everett*).
58. *Bufo spinulifer*, Mocq. Le Natur. 1890, p. 181.—Kina Baloo (*Everett*).
59. *Bufo nigricans*, Wieg. —Tarapaca, Chili (*James*).
- *60. *Bufo surdus*, Blgr. Ann. N. H. (6) vii. 1891, p. 282.—Baluchistan.
- *61. *Bufo pentoni*, Anders. Ann. N. H. (6) xii. 1893, p. 440.—Suakin (*Penton, Anderson*).
- *62. *Bufo fergusonii*, Blgr. J. Bomb. Soc. vii. 1892, p. 317.—Travancore (*Ferguson*).
- *63. *Bufo luethkenii*, Blgr. Ann. N. H. (6) viii. 1891, p. 455.—Costa Rica (*Oersted*).

64. *Chorophilus feriarum*, Baird.—N. Carolina.
 65. *Chorophilus ornatus*, Holbr.—Texas (*Indian Mus.*).
 66. *Hyla punctatissima*, Ptrs.—Theresopolis (*Göldi*).
 67. *Hyla spegazzinii*, Blgr. Ann. Mus. Genova, (2) vii. 1889, p. 247.—Paraguay (*Bolfs*).
 68. *Hyla prosoblepon*, Bttgr. Kat. Batr. Senck. Ges. p. 45 (1892).—Costa Rica (*Senckenb. Mus.*).
 *69. *Hyla goeldii*, Blgr., *infra*.—Theresopolis (*Göldi*).
 *70. *Hyla chloris*, Blgr. P. Linn. Soc. N. S. W. (2) vii. 1892, p. 403.—Dunoon, N. S. Wales (*Fletcher*).
 71. *Hyla congenita*, Ptrs. & Doria.—N. Guinea (*Doria*).
 *72. *Hylella parvula*, Blgr., *infra*.—Brazil (*Michaëlis, Göldi*).
 73. *Agalychnis helence*, Cope, P. Am. Phil. Soc. xxii. 1885, p. 182.—Guatemala (*Greening*); Nicaragua (*Rothschuh*).
 74. *Pelobates syriacus*, Bttgr. Zool. Anz. 1889, p. 145.—Smyrna, (*Christiania Mus.*); Haifa (*Senckenb. Mus.*); Damascus (*T. Barrois*).
 *75. *Leptobrachium pelodytoides*, Blgr. Ann. Mus. Genova, (2) xiii. 1893, p. 345.—Karin hills (*Fea*).
 *76. *Leptobrachium parvum*, Blgr. l. c. p. 344.—Karin hills (*Fea*).
 *77. *Leptobrachium carinense*, Blgr. op. cit. (2) vii. 1889, p. 748.—Karin hills (*Fea*).

CAUDATA.

1. *Salamandra caucasica*, Waga.—Near Batoum (*Senckenb. Mus.*).
 *2. *Tylotriton andersonii*, Blgr. Ann. N. H. (6) x. 1892, p. 304.—Loo Choo Islands (*Holst*).

APODA.

- *1. *Dermophis gregorii*, Blgr., *infra*.—Ngatana, E. Africa (*Gregory*).
 2. *Herpele ochrocephala*, Cope.—Panama (*Christiania Mus.*).
 3. *Siphonops paulensis*, Bttgr. Kat. Batr. Senck. Ges. p. 62 (1892).—S. Paulo, Brazil (*Ihering*).
 4. *Typhlonectes compressicauda*, D. & B.—Manaos, Brazil (*Antony*).

II. *Descriptions of new Species.*

RANA QUECKETTI. (Plate XXXIX. fig. 1.)

Vomerine teeth in two short transverse series between the choanæ. Head a little longer than broad; snout obtusely pointed, a little longer than the diameter of the orbit; nostril a little nearer the eye than the tip of the snout; canthus rostralis obtuse; loreal region very oblique, concave; interorbital space narrower than the upper eyelid; tympanum a little smaller than the eye.

Fingers moderate, first not extending beyond second; toes moderate, two-thirds webbed; subarticular tubercles feeble; a small, elliptic metatarsal tubercle. The tibio-tarsal articulation reaches between the eye and the nostril. Back with narrow, interrupted folds. Olive above, with black spots and a yellow vertebral stripe; a blackish canthal streak and a brown temporal spot; limbs with blackish cross-bars; lower parts white.

From snout to vent 48 millim.

A single female specimen from near Pietermaritzburg, Natal. Presented by Mr. F. J. Queckett.

PHRYNOBATRACHUS RANOIDES. (Plate XXXIX. fig. 2.)

Tongue with a free conical papilla in the middle. Habit slender. Head as long as broad; snout obtuse, as long as diameter of orbit, with indistinct canthus; interorbital space as broad as the upper eyelid; tympanum distinct, two thirds the diameter of the eye. First finger as long as second; toes two-thirds webbed; tips of fingers and toes not dilated; two small metatarsal tubercles; a small tubercle on the inner side of the tarsus and another higher up below the heel. The tarso-metatarsal articulation reaches far beyond the tip of the snout, the tibio-tarsal articulation between the eye and the tip of the snout. Above with small smooth warts, larger on the sides; no folds. Olive-grey above; a darker cross-bar between the eyes; limbs with faint darker cross-bars; lips with dark spots; lower parts white.

From snout to vent 22 millim.

A single female specimen from near Pietermaritzburg, Natal. Presented by Mr. F. J. Queckett.

CASSINA OBSCURA. (Plate XXXIX. fig. 3.)

Vomerine teeth in two small, oblique, rather indistinct groups between the choanæ. Head once and two fifths as broad as long; snout rounded, without canthus, hardly as long as the diameter of the orbit; interorbital space as broad as the upper eyelid; tympanum hidden. Fingers moderate, first shorter than second; toes moderate, one-third webbed; a very indistinct metatarsal tubercle. The tarso-metatarsal articulation reaches the posterior border of the orbit. Above with flat smooth warts, beneath with large granules. Dark olive above, sides lighter, with numerous roundish chestnut-brown spots; a white (red?) inguinal spot; greyish brown beneath, with small dark brown spots. Male with a large, black, external vocal sac on each side of a subcircular gular disk.

From snout to vent 39 millim.

A single male specimen from Let Merafa, Shoa, received from the Marquis Doria.

HYLAMBATES MILLSONII. (Plate XXXIX. fig. 4.)

Vomerine teeth in two small groups between the choanæ. Head a little broader than long; snout as long as the diameter of

the eye; interorbital space as broad as the upper eyelid; tympanum two thirds the diameter of the eye. Fingers fully half webbed; toes nearly entirely webbed; disks well developed; a small, oval, inner metatarsal tubercle. The tibio-tarsal articulation reaches between the eye and the tip of the snout. Skin shagreen above, granular beneath. Dark purple above, sides with white dots; no white line along the upper lip; indistinct dark cross-bands on the head and limbs; whitish beneath, with small brown spots.

From snout to vent 65 millim.

Two female specimens from the mouths of the Niger. Presented by Mr. Alvan Millson.

NECTOPHRYNE SIGNATA. (Plate XL. fig. 1.)

Habit slender. Snout prominent, obliquely truncate; loreal region vertical; interorbital space broader than the upper eyelid; tympanum very distinct, two thirds the diameter of the eye. Fore limb very slender, as long as the distance between the vent and the eye. Fingers moderate, webbed at the base, dilated and truncate at the end; first finger very short, half as long as second; toes three-fourths webbed, the disks smaller than those of the fingers; two small metatarsal tubercles. The tibio-tarsal articulation reaches the tip of the snout. Above with small scattered warts of unequal size; belly granular. Olive above, with black spots surrounding an X-shaped light marking on the back; limbs yellowish, barred with black; whitish beneath, spotted with black.

From snout to vent 15 millim.

Two specimens from Robong Mt., Kapuas district, Dutch Borneo. Collected by Mr. A. Everett.

HYLA GOELDII. (Plate XL. fig. 2.)

Tongue subcircular, slightly nicked behind, slightly free behind and on the sides. Vomerine teeth in two oblique groups close together just behind the level of the choanæ. Head as long as broad; snout rounded, as long as the diameter of the orbit; canthus rostralis angular; loreal region concave; interorbital space broader than the upper eyelid; tympanum distinct, half the diameter of the eye. Fingers free; no distinct rudiment of pollex; toes one-third webbed; disks nearly as large as the tympanum; no tarsal fold. The tibio-tarsal articulation reaches the eye. Skin smooth above, granular beneath, the granules strongest on the belly. Olive or brown above, with a few large, darker, light-edged spots, the anterior extending to between the eyes; a dark canthal streak and a dark, light-edged temporal band; limbs with dark cross-bars; lower parts dirty white or pale brown. Male with an internal vocal sac.

From snout to vent: ♂ 26 millim., ♀ 40 millim.

Two specimens, male and female, from Colonia Alpina, Theresopolis, Brazil. Presented by Dr. E. A. Göldi, who will shortly publish some highly interesting notes on the breeding-habits of this frog.

HYLELLA PARVULA. (Plate XL. fig. 3.)

Tongue circular, entire. Head as long as broad; snout short, rounded; no canthus rostralis; eye large and very prominent; upper eyelid very narrow; interorbital space broad and convex; tympanum distinct, hardly one third the diameter of the eye. Fingers distinctly webbed at the base, first slightly shorter than second; toes two-thirds webbed: disks moderate. Tibio-tarsal articulation reaching a little beyond the tip of the snout. Skin smooth above; belly and lower surface of thighs granulate. Greyish or pale brown above, speckled with white; lower parts white.

From snout to vent 17 millim.

Two specimens. One from Lages, Santa Catharina, collected by Hr. Michaelis; the other from Theresopolis, presented by Dr. Göldi.

This species appears to be most nearly allied to *H. carnea*, Cope, but the tympanum is perfectly distinct and the coloration is entirely different.

DERMOPHIS GREGORII. (Plate XL. fig. 4.)

15 teeth on each side of the upper jaw, 12 on each side (outer row) of the lower jaw. Snout rounded, moderately prominent; eyes distinct, the distance between them a little less than the length of the snout; tentacle in front of and below the eye, twice and a half as distant from the nostril as from the eye. Body moderately elongate; 160 folds, the posterior close together (duplicated), all except the anterior and posterior interrupted above and often also beneath. Tail indistinct, rounded. Dark brown above, paler beneath.

Total length 280 millim.; greatest diameter of body 10 millim.

A single specimen was obtained at Ngatana, E. Africa, by Dr. J. W. Gregory. It was referred to *D. thomensis*, Bocage, by Dr. Günther (P. Z. S. 1894, p. 88). The latter species (Pl. XL. fig. 5) differs in the more pointed snout, the length of which does not exceed the interocular width, and the distance between the tentacle and the nostril is four to five times as great as between the tentacle and the eye (*cf.* Pl. XL. fig. 5).

EXPLANATION OF THE PLATES.

PLATE XXXIX.

- Fig. 1. *Rana quecketti*, Blgr., p. 643.
2. *Phrynobatrachus ranoides*, Blgr., p. 644.
3. *Cassina obscura*, Blgr., p. 644.
4. *Hylambates millsonii*, Blgr., p. 644.

PLATE XL.

- Fig. 1. *Nectophryne signata*, Blgr., p. 645.
2. *Hyla goeldii*, Blgr., p. 645.
3. *Hylella parvula*, Blgr., p. 646.
4. *Dermophis gregorii*, Blgr., p. 646. (× 2.)
5. — *thomensis*, Bocage, p. 646. (× 2.)

